OBSTACLES TO THE DEVELOPMENT OF REFLECTIVE THINKING
IN THE SECONDARY SCHOOL AND PRACTICES
USED TO OVERCOME THEM

DISSERTATION

Presented in Partial Fulfillment of the Requirements
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By

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CHAPTER I
INTRODUCTION

Statement of the Problem

More changes have probably taken place in the past sixty years than in any other period in the history of the United States. The society has been transformed from an agrarian to an industrial society. Mechanization has permeated almost all walks of life. Production, consumption, and exchange has each been systematized, increased, and improved.

Scientists and science have proved beyond doubt their positive contribution to the leveling up of humanity. The superhighways have enabled swift communication; the launching of the artificial satellites have beckoned conclusively to the conquest of space by man; the jet airplanes have shrunken the size of the globe to such an extent that one can take breakfast in one continent and lunch in another. In short, man over a long range of time has at last learned to "control" nature. In fact, the degree of his control is such that some fear that he may end by destroying himself and all of his marvelous achievements. Such changes are the result of thought, the contributions of "thinking individuals" or better
perhaps, of "individuals thinking." Edison probably anticipated such a bipolar situation when he stated that what man's mind can conceive man's character can control.

Such a penetrating impact of technology on the social life comes as a result of extensive and intensive use of the scientific method of dealing with life's problems. Man previously has used other ways, however, to arrive at conclusions, or solve problems. He has used magic and intuition, and called upon supernatural power and authority. But in the past sixty years the method of science has foreshadowed most, if not all, of the other methods.

The schools, of course, have been by no means indifferent to such changes. Many changes in educational goals and methodology have been introduced, some speculatively, others as a result of sound analysis and continuous experimentation. Educators have struggled, with some success, to provide educational opportunity for all of the children of all of the people. In this connection the Educational Policies Commission of the

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National Educational Association and the American Association of School Administrators has said:

When we write confidently and inconclusively about education for all American youth, we mean just that. We mean that all youth, with their human similarities and their equally human differences, shall have educational services and opportunities suited to their personal needs and sufficient for the successful operation of a free and democratic society.²

The reinterpretation and reorientation of democracy from a narrow political concept to a more inclusive way of life has resulted in bringing noticeable changes in school policies and practices. If the school wants to contribute to society, it must help develop keen thinkers, independent scholars, and responsible citizens ready to take their place in and contribute their share to society. The school must help develop men "hungering and thirsting after the things that make man think."³ The responsible citizen of a democratic nation, is man thinking and deliberating. As the President of Yale forcefully expressed it, "Man thinking is not the member of a race apart. He is the citizen performing the function appointed for all citizens in a civilized state, a function, without


which there would be no civilized state. He is everyman purposefully apprehending the meaning of things." If this is true, then it is not only necessary but mandatory to the proper and effective operation and refinement of democracy, that the development of thinking be a central, conscious and deliberate objective of the schools.

The American schools have taken as one of their major objectives the cultivation of the habits of thinking. This can be witnessed by observing the number and quality of the articles and books written on the subject, actual practices in schools, and by speaking with school officials.

A simple tabulation of the articles appearing in the Education Index under the single topic "Thought and Thinking" reveals the following situation.

<table>
<thead>
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<th>Period</th>
<th>Number of Articles</th>
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<tr>
<td>1929-1935</td>
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<td>1935-1941</td>
<td>101</td>
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<td>1941-1947</td>
<td>82</td>
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<td>1947-1953</td>
<td>97</td>
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<td>1953 on*</td>
<td>96</td>
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<td>Total</td>
<td>428</td>
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This total of 428 articles is by no means comprehensive or inclusive. Over 400 of these articles reveal conclusively that the development of thinking as one of

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4Ibid., p. 10.

*Incomplete. (Up until May 1958 only.)
the major goals of education has either been explicitly stated or strongly implied. In professional circles, at least, this objective as an educational aim is generally accepted.

In addition to these articles there have been several yearbooks of professional associations, various committees and commissions, and prominent authors that have uniformly written and recommended that thinking be the major goal of education. An investigation of the reports of the President's Commission on Higher Education, the National Society for the Study of Education, National Education Association, Educational Policies Commission, Council on the Social Studies, and numerous other organizations substantiates the statement made above. Writings of prominent thinkers such as John Dewey, Boyd H. Bode, William Heard Kilpatrick, Bertrand Russell, and Alfred North Whitehead have supported effectively the tenet that thinking is one of the most powerful tools for progress that man possesses. Gilmer calls thinking the "one common denominator underlying all formal and informal training."\(^5\) Roma Gans has considered the responsibility of educators so important that she has proposed that

schools must consider the development of thinking to be the focal point of in-service education. F. A. Smith, writing of reflective thinking as being a unifying aim of secondary education, says

The aims of the secondary school have been expressed in terms of self-realization, economic efficiency, good citizenship, and other such objectives. Basic to all of these is the concept that in the high school we should teach boys and girls to think—to think reflectively.

It is now rare to open a publication of a high school in which the development of thinking is not mentioned at least as one of the major objectives of that school, if not the principal one.

Philip G. Smith reports the finding of a survey in which more than 99 per cent of some 400 teachers endorse the statement that: "the school must provide an atmosphere conducive to thought, must frequently provoke thought, and must help students analyze and evaluate their own thinking." In a recent survey parents and students of a high school which was undertaking a "Project for the

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9Evanston Township High School, Project for the Improvement of Thinking, Progress Report, March 1956.
Improvement of Thinking were asked "How important do you think it is that our school teach students to think critically?" The following results were obtained from a sample of 99 parents and 115 students.

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<td></td>
<td>per cent</td>
<td>of total</td>
<td>per cent</td>
<td>of total</td>
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<tr>
<td>(a) of utmost importance</td>
<td>47</td>
<td>47</td>
<td>40</td>
<td>35</td>
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<tr>
<td>(b) of considerable importance</td>
<td>44</td>
<td>44</td>
<td>56</td>
<td>49</td>
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<tr>
<td>(c) of some importance</td>
<td>7</td>
<td>7</td>
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<td>12</td>
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<tr>
<td>(d) of no importance</td>
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<td>3</td>
<td>2.6</td>
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But while educators, as stated above, support the importance of thinking and join J. G. Saxe's couplet:

At Learning's fountain it is sweet to drink,
But 'tis a nobler privilege to think.

and while some schools are attempting to implement such an objective in classrooms by devising ingenious and novel practices in methodology, instructional materials, curriculum organization, student participation, and the like, many American secondary schools\(^{10}\) are still

\(^{10}\)Secondary School and high school are used interchangeably, and include grades 7 to 12 inclusive.
following the old, traditional practice of "spoon-feeding" their students. Many educators feel that our schools have been very slow with reference to equipping students with the ability to think for themselves. James A. Smith believes

Our schools have been more concerned with preserving our culture than they are in contributing to it. There has been an excess of memorization to the neglect of teaching skills and techniques for thinking and living. Attitudes, concepts, generalizations, appreciations, and meanings cannot be memorized—they result only from experiences which are assimilated and evaluated.¹¹

The majority of American high schools still use rigid and inflexible subject-centered curricula. They give emphasis to the coverage of the material in textbooks, unduly favoring passive absorption on the part of students. Authorities like Dewey, Kilpatrick, Whitehead, Whitney, Bode and many others have pleaded that there is a dire need for improved habits of thinking in both the adult and youth population. Others, like Bestor, Abel, and Barzun have argued that current instructional practices are not producing satisfactory levels of thinking in students. The launchings of the Sputniks by Russia and the Explorers by the United States of America have

further produced a noticeable wave of criticism of the American Secondary school for failure to produce scientists and, by implication, creative thinkers. Unfortunately, the lack of rigorous training assumed to be identified with thinking, in mathematics and science turns out to be the central feature of most of the criticism.

The above discussion may lead to the conclusion that no progress in training in thinking has been made by the American high school in the past sixty years. Nothing could be further from the truth. The mere fact that the cultivation of the habit of thinking has been advocated at least in theory as a major goal of education is a positive step forward. There has been more concern given to the welfare of individual students, and more understanding of the dynamic nature of adolescents. Yet Dewey placed a proper emphasis years ago when he said:

No one doubts, theoretically, the importance of fostering in school good habits of thinking. But apart from the fact that the acknowledgment is not so great in practice as in theory, there is not adequate theoretical recognition that all which the school can or need do for pupils, so far as their minds are concerned (that is, leaving out certain specialized muscular abilities) is to develop their ability to think.\(^{12}\)

Schools have provided students with practice in thinking convinced of the fact that it is necessary for the improvement of thinking. "There is no substitute for the actual wrestling with real problems in the development of thinking." Thus, more student participation has been encouraged. Group discussion has been used to supplement the lecture method. Many curricular reorganizations, such as the different types of the core curriculum have been instituted. Individual and group projects have been assigned to take care of individual differences. The experiences of the Eight-Year Study under the auspices of the Progressive Education Association are examples of such attempts.

Some progress has been made, obviously. But a question remains:

Why have the majority of the high schools failed to develop successful practices to realize their avowed goal, i.e., the development of thinking on the part of their students? Are there obstacles that deter school people from trying to foster reflective thinking in students? Are they aware of these obstacles and are they doing anything by way of overcoming them?

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15 Obstacle in this study means anything that is a deterrent to or an interference with the development of reflective thinking in the secondary school.
These and similar questions deserve critical analysis. Many writers have attempted in the past, to set forth answers. Such factors as reliance on tradition or dogma, the lack of provision of integrating experiences, the lack of adequate preparation on the part of teachers, fear of pressure groups, and others have been expressed. But nowhere has the present investigator been able to discover a systematic and detailed study dealing with the obstacles school people face in developing thinking in secondary school students.

In the absence of any major study, reported in the literature, and convinced that such a study should be undertaken, the writer set out to work with this problem, hoping to throw some light on the whole situation and open an avenue for future research. But even in the absence of a substantial contribution to future workers, it would still fulfill a major part of its service, namely, satisfying the intellectual curiosity of the investigator.

This study is, therefore, an attempt to identify the major obstacles to the development of reflective thinking in the secondary school and, where these are discovered in the process, to describe and evaluate practices used to overcome them.
Definition of Terms

Reflective thinking. There are so many ways in which the terms "thinking" and "reflective thinking" are used in the literature that a brief discussion of the meaning used in this study seems proper at this time. Furthermore, the term "reflective thinking" occupies such a key position in the study that a brief analysis of its meaning as a guide would serve as a basis for further discussion.

What then is thinking? The term "thinking" is generally used in a rather loose manner and it has come to the stage where it carries an "assorted load of ideas." It refers to diverse behavioral activities of man, such as reverie, fantasy, guessing, imagining, remembering, recognizing, feeling, reflecting, creating, rationalizing, judging, ideating, just to mention a few.

Perhaps because of such diversity of meanings, there have been many "qualifying" words appended to it. But the addition of such words has further confused and clouded the meaning of the term. Thus one finds such expressions as: clear thinking, straight thinking, reflective thinking, elaborative thinking, logical thinking, rational thinking, inventive thinking, critical thinking, productive

thinking, reproductive thinking, creative thinking, empirical thinking, human thinking, scientific thinking, autonomous thinking, postulational thinking, if-then thinking, and many others.

At first sight a reading of such expressions may incline one to conclude that there are multiple processes of thinking varying in kind and degree. This may be the case. But a closer analysis of the meanings used in such expressions reveals that (1) many of these terms are used synonymously, e.g., problem-solving, critical thinking, reflective thinking; (2) some of the expressions designate some phases of the whole process, e.g., postulational or if-then thinking, logical thinking; (3) some seem to indicate the close link between thinking and language, e.g., clear thinking, straight thinking; (4) some refer to the differentiation between the higher mental processes of man the lower animals, e.g., human thinking, rational thinking, sub-human thinking; and (5) some refer to the degree of novelty introduced in the process, e.g., creative thinking, inventive thinking.

The difficulty of defining "thinking" or "reflective thinking" is further enhanced by the existence of many theoretical formulations, differing in basic assumptions and approaches. Thinking has been thought of as a
mystical, spiritual "power" or "substance" possessed only by man thus being the unique trait that distinguishes him from other animals. At the other extreme, thinking has been explained purely in terms of physiological processes, such as "the number and organization of association fibers, nature of synaptic organizations, amount of available cerebral energy and the ability of the brain to function as an accelerating and inhibiting organ."17

The difficulty with such explanations is the oversimplification of a complex mental process and the tendency to state in black and white what is the truth. Endless and often fruitless discussion was undertaken in an attempt to determine what is this truth. In many instances, "thinking" was a victim of such procedures.

This weakness was gradually overcome when authorities began to deal with human activities in terms of behavioral manifestations. What are the behavioral manifestations of man as a result of such an activity called reflective thinking? What does a person who thinks reflectively do? It is easier to describe the activities involved, say, in jumping, or in swimming than to attempt to pin down what is jumping or swimming. It is easier to describe

what electricity does, how it produces light, heat, etc. rather than dwell on the question, "What is electricity?"
The same situation applies to "thinking." This approach further considers "man's" reaction as a whole to his environment, and not his "imagination" or "memory" or "muscular fibers" which are but parts of the whole organ.

Thought refers to the reaction of the individual when faced with a problematic situation. It refers to the processes involved in adapting oneself to the vicissitudes of life with promptness and efficiency. It further refers to his reaction which he feels incompetent to cope with a situation in a merely habitual manner. It is a process of adjustment in which transition from a doubtful or perplexing situation is transformed to its solution or to diminution of the doubt. Warren defines it as "a determined course of ideas, symbolic in character, initiated by a problem or task, and leading to a conclusion."18 This definition introduces such elements as ideas, problem, conclusion, and the process involved in travelling from a problem to a conclusion. John Dewey, one of the great exponent of reflective thinking, and one of the most influential authorities in the field, describes

reflective thinking as the "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends."¹⁹

Dewey's definition entails the conscious and deliberate effort exerted by man to test what he believes in or what he knows. As such the first necessity of identifying the exact nature of the difficulty which he has to meet is established. Man's behavior becomes purposive in the sense that the individual directs his attention to solving a problem in which he is himself dynamically involved. Having described "reflective thinking," John Dewey, proceeded to elaborate on the steps involved between the pre-reflective stage of the problematic situation and the post-reflective stage of a resolved situation. The steps include:

1. Suggestions, in which the mind leaps forward to a possible solution.

2. An intellectualization of the difficulty or perplexity that has been felt (directly experienced) into a problem to be solved, a question for which the answer must be sought;

3. Hypothesis, the use of one suggestion after another as a leading idea, to initiate and guide observation and other operations in collection of factual material.

4. The mental elaboration of the idea or supposition as an idea or supposition (reasoning, in the sense in which reasoning is a part, not the whole, of inference); and

5. Testing the hypothesis by overt or imaginative action.²⁰

Reflective thinking, then means that the individual is confronted with a vexing situation, that he identifies the exact nature of what is vexing him, that he attempts to hit upon means of solving it, that he overtly or imaginatively tests one suggestion after another, and that he modifies his behavior on the basis of his findings. The steps mentioned may be fewer or greater. It may be four as suggested by Bode²¹, six as suggested by Russell²² or ten as suggested by Keeslar.²³ The differences in many cases are one of degree and convenience rather than kind, although in some cases there is a difference in kind. A comparison of Bode's four steps with Kilpatrick's seven, for instance, reveals that the latter's steps give no provision to the discovering of evidence or gathering data.

²⁰Ibid., p. 107.
But the general pattern of the process described by Dewey, is rather widely supported. There is no experimental study that the writer is aware of that successfully challenges the theory. On the other hand, there are experimental studies that support it. There are studies such as the one by Bloom and by Heidbreder, however, in which certain variations are cautiously expressed. But when one takes into consideration that Dewey's analysis is based on a sharp, logical, introspection, and when one considers the warning of Dewey himself in which he stated that the steps do not necessarily "follow one another in a set order" and that the number "five" need not be taken as final, one need not consider the variations as "novelties." This conclusion of course would not have been tenable had the variations mentioned been of "kind" rather than of "degree." And thus to date Dewey's analysis still remains tentatively sound. Therefore reflective thinking, as used in this study entails the following major elements:

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1. It involves a process beginning with a problem and concluding with a solution of the problem.

2. It involves knowledge of, skills in, and abilities of the reflective method.

3. It includes the cultivation of attitudes such as open-mindedness, whole-heartedness and responsibility, if (1) and (2) are to be effectively realized.

4. Its fullest realization embraces acting and modifying behavior on the bases of conclusions reached and further consequences anticipated.

Purpose of the Study

As was noted in the statement of the problem this study attempts to investigate the major obstacles to the development of reflective thinking in the secondary school, and some of the successful practices used by forward-looking teachers in overcoming them. Specifically the study aims:

1. To identify the major obstacles encountered within the secondary school in the development of reflective thinking, and,

2. To identify the major practices used in the secondary school to overcome these obstacles.
As may be inferred easily, there are a number of major assumptions made by the investigator. It is assumed that

1. Reflective thinking is an important objective of the secondary school. This assumption is based on the contribution of reflective thinking to society and its present status in the secondary school.

2. Habits of reflective thinking can be significantly improved as a result of direct instructional provision. This is made on the basis of several experimental studies which conclusively support the statement, as will be reported in the second chapter.

3. There are obstacles deterring the improvement of reflective thinking in the secondary school and these obstacles can be identified by leaders in education and by teachers at the grassroots level of the profession. This is stated on the basis of the literature and in terms of the personal experience of the investigator.

4. There are some schools and teachers who are consciously innovating successful practices to overcome obstacles they encounter in and out of the classroom. This is again based on the experience of the investigator with a few teachers and schools and on the review of the literature that deals with this phase of the study.
Need and Importance of the Study

The need and importance of any study are judged in terms of certain standards explicitly recognized and considered by the investigator. Such questions as: needed by whom?, important to whom?, and the like, demand serious consideration. It would make a difference whether the results of a study were useful primarily to society or to the individual or to both. This study, it is hoped, will be of benefit to schools, helping them notice certain of the identified obstacles and use or modify certain of the practices intelligently in their situations. And, beyond this, the author hopes that his study will arouse interest in advancing this basic educational purpose.

It has been argued that democracy demands an intelligent citizenry, a citizenry that knows how to deal with pressure groups, a citizenry that solves problems on the basis of serious, individual deliberation. It would follow, therefore, that any study that tries to discover and publicize any of the factors that work against this ideal of democracy is important. It is a corollary of the above statement that any attempt to effect strongly and extensively the development of thinking should be welcomed in a society that prides itself for having embraced this as an important goal.
Democracy is a complex social structure. It is a social arrangement in which individual and group variations and differences are welcomed and encouraged to flourish as long as they do not interfere with the "common good." But in such a variegated and complex society, there are many and unpredictable forces, factors which at times work against the school's effort to help foster fully the thinking capacity of individual students. An early identification of these forces, and an early attempt to correct them should prove valuable. This study, it is hoped, may fulfill this demand.

Any genuine profession, be it medicine or law or theology extends its horizon and deepens its tenets by alert and constant self-evaluation and research. Education should be no exception. School people should constantly evaluate their own practices. An investigation such as this would thus be in order.

It has furthermore been mentioned that the investigator came across no study of this nature in his review of the literature; hence, this study deals with a topic not much investigated. This may prove to be a weakness; yet, if it opens the horizon for further study, its weakness may prove to be, paradoxically, a strength.
Lastly, it is thought by the writer that an investigation of the obstacles may lead to an improved method of teaching habits of reflective thinking. Writes Jastrow:

The understanding of right thinking may be advanced by analyzing how thinking goes wrong. Logic has always included the study of fallacies. A helpful psychological approach is to consider that as there are impediments of speech which prevent the speaker from speaking plainly, so there are also impediments of thought which prevent the thinker from thinking effectively.27

These reasons, coupled with the intriguing nature of the subject, a subject that deals with human thinking, human ingenuity, a subject that for a long time has interested the investigator, are considered to be sufficient to make the study worthy of time and effort on the writer's part.

Limitations of the Study

In giving importance to the findings of this study, as well as in interpreting them, certain limitations need to be kept in mind. The problem of the study is rather general and as such the solution may prove to be general and consequently less helpful as guides to school people.

Although the topic may be equally appropriate to all levels of education, it is here limited to the secondary

school level. Therefore, all generalizations need to be taken within such a context.

The study may be said to be subjective in character, rather than objective. The judgment of leaders in education, teachers, principals in selecting teachers to respond and the recommendation of professors of education of forward-looking schools are cases in point. This study, however, is not an expression of wishful thinking as will become clear from ensuing sections.

There is furthermore a question of sampling involved. The phase that deals with successful practices, favors strongly the Midwestern states. The number of teacher respondents may also be inadequate.

There is the further limitation of the reports of the writer's visits and observations. Though the investigator, to the utmost of his capacity, tried to describe the practices from his interviews and observations as objectively as he possibly could, the report is, nonetheless, that of a single individual.

There are, in addition, weaknesses attributable to the questionnaire technique, interview and observation techniques, weaknesses arising from the fact that the questionnaire demanded more time than many teachers had at their disposal, and the limited number of responses.
Procedures and Sources of the Study

The selection of sources and of methods for undertaking a study should take into consideration the nature of the problem, and the purposes the study is trying to fulfill. The same applies to procedures followed. Although it is difficult to pinpoint and label this study, it falls within the category of what researchers call a "formulative or exploratory study." In a topic such as the one this study deals with,

...exploratory research is necessary to obtain the experience which will be helpful in formulating relevant hypotheses for more definite investigations. By providing information about existing situations which may prevent or invite the testing of hypotheses, exploratory research may also serve as a means of discovering the practical possibilities for carrying out different types of research.28

The data for this study have been gathered from a variety of sources—results from two questionnaires, one responded to by leaders in education, the other responded to by teachers, are the main sources. These sources have been supplemented by the investigator's visits and observations to a selected number of schools and a review of the pertinent literature. The following procedures were undertaken.

The literature that deals with obstacles to the development of reflective thinking was investigated, analyzed, and a tentative list of statements formulated. These statements were sent to leaders in education for their reaction on a five point scale, for their critical evaluation, and for suggesting additional obstacles they felt were important.

On the basis of the leaders' reactions and suggestions a revised list of statements was prepared and sent to a selected number of forward-looking secondary schools or forward-looking teachers for further reaction and validation. This phase of the questionnaire included two new items, (a) the provision of illustrations successfully used by teachers in overcoming the obstacles, and (b) the provision of a general question at the end of the questionnaire requesting teachers to state methods, instructional practices and materials, classroom atmosphere, types of questions, etc. they use in developing reflective thinking in their students. They were also requested to enclose materials such as resource units developed and available at their school, or other instructional materials used for such purposes by them.

On the bases of criteria to be explained later, the writer selected six schools for visitation in four
different states of the Midwestern region. This phase of the study dealt with a close observation of practices employed by teachers in overcoming obstacles and developing reflective thinking. It also served as a further validation for the practices mentioned by teachers in the second questionnaire.

Analysis of the literature that dealt with the methodological phase of the study and the historical development of reflective thinking as an educational aim, were also undertaken.

On the bases of the data gathered from these sources, the last phase of the study dealt with the organization, tabulation, interpretation, and reporting of the findings.

**Organization of the Study**

In reporting the study the following organizational schemes was followed.

Chapter I, as we have seen, presents the statement of the problem under investigation, the purposes of the study, its need or importance, the definition of key words in the study, limitations, procedures, and sources of the study and an overview of the organizational scheme of the entire study.
Chapter II deals with a brief background discussion of reflective thinking: the historical development of the concepts involved in reflective thinking and the growing significance of the position assumed by reflective thinking as an important educational objective.

Chapter III reviews the literature that deals with obstacles to the development of reflective thinking.

Chapter IV presents the procedures used in formulating and validating the list of obstacles to the development of reflective thinking.

Chapter V analyzes the responses of the selected group of teachers to the questionnaire.

Chapter VI deals with the general procedures reported in the literature and used by teachers in developing reflective thinking.

Chapters VII-IX present the specific practices used by teachers in overcoming the obstacles to the development of reflective thinking.

Chapter X summarizes and presents the major conclusions and recommendations of the study.
CHAPTER II
DEVELOPMENT OF REFLECTIVE THINKING AS AN
EDUCATIONAL AIM IN HISTORICAL
PERSPECTIVE

Introduction

This study deals with obstacles in the development of reflective thinking that secondary school people encounter. It is therefore within the context of the study to include a discussion on the historical development of reflective thinking as an educational aim.

A brief discussion of this aspect will throw some light on the duration, the degree, and the extent to which schools have considered reflective thinking an educational aim. Furthermore, a discussion of the contemporary status of reflective thinking in the schools, and the experimental studies that have been undertaken, may give meaning and texture to a discussion of possible activities undertaken by practitioners to develop reflective thinking. What are the contributions of the different periods of history to the development of reflective thinking as an educational aim? What are the historical bases upon which contemporary emphases on the development of reflective thinking as
an educational aim are based? Are contemporary emphases supported by experimental studies? A discussion of these problems and others make up the content of this chapter.

The history of thought is the history of civilization. It is not, therefore, the intention of the writer to cover in this chapter, even in outline form, man's achievements of over 2000 years of struggle. The emphasis here is not so much on detail as on trends and major contributions, with the view of giving a general orientation to the study. A detailed and comprehensive discussion is available in the literature from the original writings of philosophers, educators, psychologists, etc. and from many secondary sources. The discussion is limited further to the writings of the Western world, beginning with the Greek era. That this is so is mainly because of the contribution of the Western world to the topic under consideration and because of the abundance of the literature that has preserved such contributions.


**Early Period**

History notes that significant civilizations have flourished in different parts of the world, before the Greek era. It is thus difficult to believe that the glory that was Egypt's, Babylonia's, India's, or China's could have reached such peaks of achievement without the contribution of reflective thought. But it took the Greeks to systematize, theorize, and argue on theories of knowledge, methods of approach, and cultivation of attitudes. The great Greek philosophers in this field that are generally recognized are Socrates, Plato, and Aristotle.

Plato tells us of Socrates as having said that the unexamined life was not worth living. Socrates was so obsessed to pursue what is true that he gave his own life for his beliefs. We all remember Socrates for his "Socratic method." He used and urged others to have a questioning mind in order to reach the truth. Paul Coffey describes the method that Socrates used as follows:

Socrates used to seek from others the knowledge they imagined they possessed, and which he himself pretended not to possess. His arguments took the form of dialogues, each in two parts. In the first, his "irony" confounded his interlocutor and convinced the latter of the weaknesses and drawbacks of his position. In the second, Socrates gradually drew from him a new and truer definition, a better
understanding, of the matter in dispute. After silencing his opponent in the first or destructive stage, he would begin by another series of questions to construct a new solution to the problem.2

Book I of Plato's Republic is illustrative of the "Socratic Method." Aristotle further tells us that "there are two contributions which one justly credits to Socrates: inductive arguments and general definitions, both of which are scientific principles."3 In his use of discussion, emphasis on clear, unambiguous definition, inductive argumentation, and the attitudes of keeping a questioning mind, and zest for truth, we see the contributions of Socrates to reflective thinking as we understand it today.

Plato followed Socrates. He proposed an elaborate educational scheme with regard to educational aim, method, and duration. Plato stated that education involves the redirection of the whole personality. Thus he asserted:

Our present argument shows us that there is a faculty residing in the soul of each person, and an instrument enabling each of us to

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learn; and that, just as we might suppose it to be impossible to turn the eye round from darkness to light without turning the whole body, so must this faculty, or this instrument, be wheeled round, in company with the entire soul, from the perishing world, until it be enabled to endure the contemplation of the real world, and brightest part thereof, which, according to us, is the Form of the Good. Hence, this very process of revolution must give rise to an art, teaching in what way the change will most easily and most effectually be brought about. Its object will not be to generate in the person the power of seeing. On the contrary ...... its aim is to remedy this defect.4

It is difficult to make a distinction between Plato's use of "inductive reasoning" and "deductive reasoning." But on the bases of such concepts as "innate ideas" of absolute truth or good, it is not difficult to see that he capitalizes on deductive reasoning. But Plato's explanation of the "dialectic" goes further than the mere act of discussion involving the asking of questions and giving of answers. "In his hands" say Curtis and Boulwood, "it came to mean two things: firstly and more commonly, a right method of reasoning which could be employed either for the discovery, the communication, or the demonstration of truth. The term is also used...to

denote what completed knowledge would be if the dialectic method had been carried out in each of the several branches of knowledge."

Plato's conception of "innate ideas" and his distinction between body and soul are important points to keep in mind for his influence is still enduring.

Aristotle is the other great "mind" whose impact on the topic of thinking has been and is still great. He can indeed be said to be the first scientist of his time. Aristotle's contributions are several. He emphasized accurate, sharp observation as an indispensable element to the reflective method. Aristotle also emphasized analysis and classification of phenomena. In addition, his syllogism and deductive reasoning were important contributions. His Organon is believed by many to be an important example of a handbook for education and an outstanding example of the deductive method of learning. He argued that reason distinguishes man from lower animals, and because of it the cultivation of reason necessarily constitutes the highest good of man. Thus, we see easily, in these Greek thinkers, the germ and the sprouting of the seed as regards the nature, importance, and processes

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5Curtis and Boulton, op. cit., p. 20.
of reflective method. More light would be thrown if one were to survey the Greek concept of nature, of cosmos, of man, of philosophy, especially the concept of the mind and related fields. But for our purpose it is sufficient to note:

1. The Greek's faith in intelligence and science and that their eminent interest in knowing is a precursor to modern scientific development.

2. They established reasoning as a means of seeking knowledge.

3. They introduced "deduction" which, with slight modification, has been influential throughout the ages.

4. They advocated training in reasoning as a distinct and important educational aim.

Medieval Period

The period following the fall of the Roman Empire and the beginning of the Renaissance is known as the Middle Ages. This was an age of assimilation, an age of indoctrination of the new forces in Europe with Christian ideals.


7Randall, op. cit., p. 44.
As far as our present investigation is concerned, nothing novel was achieved. Perhaps the contributions of St. Thomas Aquinas and of Peter Abelard in what came to be known as the Scholastic Method are worth mentioning, for such points of view are still influential in many contemporary schools. Abelard in his *Sic et Non* assembled 158 questions based on different opinions and conflicting statements of the Holy Fathers. His purpose was to help the student see the pros and cons questions and arrive at a reconciliation on the basis of reasoned decision. In evaluating this prologue of Abelard, Curtis and Boulwood believe that it "contains an important educational principle, namely, that every weighty question has two sides and that a rational decision can only be reached by a careful study of both of them, a principle which is of immense importance in our present propaganda ridden world."  

St. Thomas Aquinas in his *Summa Theologica* synthesized the works of Aristotle in terms of Christian beliefs. Based on the basic assumptions of the Bible and Aristotle, he, *par excellence*, perfected and strengthened the deductive method of reasoning. Since Aquinas started with

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9 Ibid.
certainty and attempted to create harmony among the "apparent" conflicting ideas of Christianity and Greek philosophy, he did not create but, rather, gave new expression to old theses. The following general observation of the Medieval period—its aims, methods, and attitudes may be made for our purpose.

1. The starting point of the scholastic method was not observation and the establishment of a fact or facts but rather the reinforcement of accepted beliefs. The beliefs were based on the authority of the Scriptures, writings of the Fathers, or on Aristotle.

2. In situations where the Bible contradicted observation, the latter had to give way to the former. Thus, the test of truth, in the scholastic method, was not experimental verification but the inclusion of the idea in the accepted system.

3. The scholastic method established a relationship between reason and faith. St. Thomas claimed that all truths are not accessible to reason, such as the Trinity. Thus he maintained that "Some, like the Trinity, are as unreasonable to the greatest intellect as the reasonings of a philosopher are to the plain man."

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10Randall, op. cit., p. 96.
11Ibid.
12Ibid., p. 95.
4. The great scholastic system built by Aquinas is not "inspired by the aims of modern science, to predict the future and control nature; it seeks understanding rather than description, contemplation rather than control. Its goal was the meaning of human life and of all creation as related to it, and hence its object was that which alone gave purpose to existence, God." ¹³

5. Attitudes of accepting a wealth of untested explanation, passion for certainty, and a dislike of the doubting and tentative spirit were prevalent even among the learned group, let alone among the common men. ¹⁴

By the time this period was ending, certain consequential elements were entrenched, reinforced, and re instituted. ¹⁵

In the philosophical discussion of the conception of the "mind" dualism was the central and directing conception. It was accepted that the ability to "reason" differentiated man from the brutes. This "reasoning" power was explained in terms of "soul" "vital force" or "motivating energy," forces that were considered as real as the body of man.

¹³Ibid., pp. 98-99.
¹⁴Ibid., p. 31.
¹⁵For the following discussion, see Clyde E. Curran, "Teaching People to Think," Progressive Education, XXVIII (February, 1951), pp. 132-5.
Because of this claim the cultivation of "reasoning" was considered one of the noblest and important duties of teachers. In actual implementation stages, certain subjects, thought to develop reasoning and challenge thought, were given precedence, e.g., the seven liberal arts comprised of the Trivium and the Quadrivium.

This ability to "reason," developed by studying what came to be known as the classics, would equip individuals to deal with everyday problems that required thought. Once developed, it was assumed that reason would function equally well in all fields, that the logical mind would adapt itself to any endeavor. The significance of these generalizations is this: though they were established at the end of the Middle Ages, they are still representative of many teachers and educational leaders.  

The Transition Period

Compared with the Middle Ages, this was a restless age. In this period a revival of the ancient learning took place. In this period, too, a revolt against  

authority broke out—the revolt from the Medieval Church, revolt from feudalism, revolt from a rigidly systematized philosophy. Parallel with these movements, new interests and fresh outlooks arose—the interest in the world of nature, interest in the Baconian method of inductive reasoning. In the background of such diverse movements, we witness the rise of scientific inquiry. Randall has very well summarized the effect of one of the revolts, i.e., the Reformation. He points out that it broke the unity and completeness of the great Medieval synthesis, that the individualism of Protestantism was bound to result finally in the transference of the seat of intellectual authority to the experience and reason of the individual, and to contribute to the spread of education. 17

Writing on the revival of ancient learning, Randall stated that

what the revival of ancient learning did for science was to bring a wealth of conflicting suggestions into men's ken, and force them to appeal to reason to decide; just as the reformation by its warring interpretations of the Bible similarly forced a religious rationalism. 18


18 Ibid., p. 218.
This age also welcomed and honored unwittingly, at times, great thinkers. Nicholas Copernicus's publication of his *De Revolutionibus Orbium Celestium* in 1543, was a landmark in the history of thought. His explanation of the method he used to arrive at his theory is worth noting. Ellwood P. Cubberley, summarized his steps as follows:

1. Dissatisfaction with the old Ptolemaic explanation.
2. A study of all known literature, to see if any better explanation had been offered.
3. Careful thought on the subject, until his thinking took form in a definite theory.
4. Long observation and testing out, to see if the observed facts would support his theory.
5. The theory held to be correct, because it reduced all known facts to a systematic order and harmony.19

The "inductive approach" of reasoning, represented in the above steps is now common but was then almost a novelty. The far-reaching impact of such an approach was observable when thinkers who daringly lectured and published in various fields of sciences at times gave their lives as they thus challenged established belief. Tycho Brache's (1546-1601) insistence on accurate observation, Johann Keppler's (1571-1630) endorsement of Copernican

theory, Galileo Galilei's (1564-1642) development of the telescope, Sir Isaac Newton's (1642-1726) mathematical studies to substantiate the Copernican theory, William Harvey's (1578-1657) discovery of the circulation of the blood, Conrad Gessner's (1516-1565) observation and extensive writing on plants and animals—these and many others laid the foundation of modern astronomy, physics, chemistry, medicine, anatomy, physiology.

But it is to Francis Bacon, perhaps more than any other thinker that we are most greatly indebted. It is not without justification that historians label him as the father of modern science. He formulated and systematized this new dynamic movement in his *Novum Organum*, published in 1620. Bacon firmly insisted upon the importance of observation. Hence, he advocated the use of the inductive method. He taught that careful investigation, systematic analysis, and the avoidance of prejudices were all necessary for reliable and valid investigation.

Before formulating his new method he explored the inadequacies and weaknesses of the method of argumentation, the influence of past ages of such topics as alchemy, magic, miracles, superstitions, and the new learning of the humanistic Renaissance which tended to be verbal,
stylish, and polished. He commented on the method he advocated in the following words.

There is so great a number of particulars and that army so scattered and dispersed as to distract and confound the understanding, little is to be hoped for, from the skirmishings and slight attacks: and desultory movements of the intellect, unless all the particulars which pertain to the subject of inquiry shall be means of Table Discovery, apt, well-arranged, and as it were animate, be drawn up and marshaled, and the mind be set to work upon the helps duly prepared and digested which these tables supply.

His method, in essence, is similar to the process of the reflective method greatly elaborated in the twentieth century. A question or difficulty is posed, the senses are used as an experimental reference point, and by critical analysis, some solution is to be found. He emphasized that the method used is the secret of success in science.

Bacon's influence was such that Randall aptly described his contribution when he said:

In this search for power over Nature, this Faust-like spirit of the new science, occurs, at last the marriage of the knowledge of the world and the service of man. It was science becoming more humanized, less divine; it was

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science serving, not them that built the cathedrals to carry them to God, but the rising commercial and industrial classes. All the early scientific thinkers shared this gospel of bending nature to man's will; but one has made it peculiarly his own by his ringing enthusiasm and iteration, and it is this we mean when we speak of the 'Baconian spirit'.

The important question to raise here is this: while many individuals in different parts of Europe were contributing their share to the reorientation, refinement, and stability of the scientific method of inquiry, how far did this new movement penetrate in the schools? If it did make itself felt in the schools, how was it organized and implemented at the classroom level?

The contribution of this period to the development of reflective thinking is an indirect one. This period began to show realistically the fruitful contribution of the scientific method of inquiry and perhaps created an awareness or sensitivity on the part of some school people. As such a movement arose amid an antagonistic traditional tenet of fixed authority, it was not to be expected that it would permeate the school situation. The movement, however, in a small scale led to the introduction of the study of science and the application of scientific method in the schools.

\[21^{\text{Randall, op. cit., p. 224.}}\]
The greatest contribution of this period would perhaps be the formulation of the scientific method by Bacon in England, Descartes in France, and the actual experimental investigations by different thinkers in the different branches of the physical sciences.

The Consolidation and Enlightenment Period

With the advent of the scientific method in the previous period, the ground was prepared for an extensive contribution to the further explanation of the scientific method and its application in the school situation. This period witnessed a definite contribution of philosophers who were interested in the educational implementation of the scientific movement, just as there were others who were fascinated by the explanation of the process of thinking. Pedagogical details were worked out, and psychological studies undertaken. The intellectual advancement of this period was such that Hettner in 1784 has this to say: "Love of man and freedom of thought are gaining the supremacy... Useful knowledge is growing among all classes."22 There were novel contribution by

different writers. Bishop George Berkeley's insistence that perceptions beginning with and through the individual are the only foundations of true knowledge. David Hume's insistence that experience is the starting point in reflection, Thomas Hobbes positivistic interpretation of nature, John Locke's postulation of the mind as a "Tabula rosa," Comenius' and Ratke's formulation of pedagogical principles, are but a few of the brilliant novel elements of this period. Wolfgang Ratke and John Amos Comenius formulated and expounded principles to guide teachers in translating the basic Baconian ideas in ordinary classroom situations. Having analyzed these methodological ideas Cubberley summarized them in thirteen points, seven of which are reproduced below:

1. That education should proceed from the simple to the complex and the concrete to the abstract.
2. That things should come before rules.
3. That students should be taught to analyze...
4. That each student should be taught to investigate for himself, rather than to accept or defend upon authority.
5. That only that should be memorized which is clearly understood and of real value.
6. That restraint and coercion should be replaced by interest in the studies taught.
7. That a uniform and scientific method of instruction could be worked out, which would reduce education to a science and serve as a guide for teachers everywhere...

It is clear from these points that definite guiding principles were formulated. How many of the schools used them is a pertinent question to raise but difficult to answer. It seems from available sources that it took the schools a long time before they embraced them, excepting a few schools administered by such rare innovators as Comenius and Batke.

John Locke (1632-1704) and Immanuel Kant have each touched on important phases of the topic under investigation. Locke in his *Essay Concerning The Human Understanding*, *Some Thoughts Concerning Education*, and other writings set forth his thinking on education. But the important aspect of his discussion that concerns us here is his conception of the human mind—what it is and how it functions. Contrary to the philosophical tenets of Plato and his followers, Descartes, Malebranche and others, Locke attacked the theory of "innate ideas." He held instead, that man is born with a mind which is a blank tablet or a "tabula rasa," as he called it.

> Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas:—How comes it to be furnished? Whence comes it by that vast store which the busy and boundless fancy of man has painted on it with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from EXPERIENCE.\(^24\)

Locke thus emphasized the human senses that came to be called "gateways of knowledge." Locke did emphasize the importance of reasoning, abstraction, and reflection but believed that such processes were the capacities of the human mind which could function only after the outside world left its impressions upon it. Such an explanation led others to formulate structural psychology. "According to this point of view," says Bode, "the primary business of psychology is to determine the structure of the mind or consciousness by analyzing it into its elements; consequently this psychology is sometimes known as structural psychology or the psychology of structuralism." 25

In spite of all the weaknesses of Locke's theory of the human mind, his disciplinary theory of education, and his theory of the transfer of training, he remains "essentially the founder of modern scientific investigation to a study of the mind..." 26 His effort to explain the "how" of the human mind, as well as the "what," on the basis of empirical psychology remains one of the significant contributions to a clarification of the process involved in human thinking. Locke is to be credited for his attempt to replace philosophical psychology by empirical psychology.

26Randall, op. cit., p. 433.
John Locke, in addition to his interpretation of the process of reasoning, held thinking to be an important aim in the proper disciplining of the mind. The purpose of education in his view, was above all else to make man a reasoning creature. In this phase of his thinking, then, Locke is as important now, as he was in the eighteenth century.

Immanuel Kant is another commanding figure of this period. His work, the *Critique of Pure Reason*, is a brilliant attempt to determine how man thinks. Kant supports the use of scientific experimentation in educational methodology. He supports the establishment of experimental schools as is clearly evidenced in the following quotation.

Experimental schools must first be established before we can establish normal schools. Education and instruction must not be merely mechanical; they must be founded upon fixed principles...People imagine, indeed, that experiments in education are unnecessary, and that we can judge from our reason whether anything is good or not. This is a great mistake, and experience teaches us that the results of an experiment are often entirely different from what we expected.²⁷

It is interesting to see the change of situations. In previous periods we have seen that experimentation was

largely, if not entirely, restricted to the physical sciences. By the end of the eighteenth century, however, not only do we observe that the development of thinking is an important function of schools, not only do we witness the rise of experimental psychology which now has quite a bit to say on the processes of human thinking, but we discover, also, developing support for a decision to base educational methodology on experimentation.

The struggle in the future would be the further fight to base educational theory and practice on experimentation, the further elucidation of certain phases of the process, and the synthetic reformulation of reflective thought by contemporary thinkers. In the light of these discussions it would be illuminating to pursue the trail of experimentation at the classroom level. But this was the contribution of thinkers in the next period—the modern period.

The Modern Period

Several elements contributed to the present-day status of our understanding of reflective thinking and its place in the schools. In the past ages the method of science was by and large restricted to the so-called scientific fields, i.e. the physical sciences, and much advance took place in those fields. But now there arose
a new movement to study "man" and his interaction with the environment scientifically. The study of man began to be pursued. The social sciences arose. The study of economics, jurisprudence, anthropology, sociology and, above all, psychology was undertaken with zeal and earnestness. Psychology began to be reconstructed on the basis of experimentation. Wundt in Germany, William James in the United States, and later Edward Lee Thorndike, J. B. Watson, and other behaviorists, began to explain man's behavior directly. The Gestalt movement under the leadership of Kohler, Koffka and Wertheimer undertook experiment after experiment that challenged the Wundtian and behavioristic psychologists. John Dewey, of course, has challenged this view in the 1890's.28

All of this meant the introduction of fresh explanations and the warning that there were still many unsettled hypotheses to be investigated. Thinking was explained in terms of man's physiological nervous system. Watson considered "mind" and "consciousness" foolish anachronisms that persisted from Medieval philosophy, ideas we could usefully eliminate from our thinking concerning ourselves only with behavior. Gordon H. Hullfish29, of Ohio State

29Gordon H. Hullfish, Aspects of Thorndike's Psychology in Their Relation to Educational (contd p. 52)
University, challenged this view early before the
Gestaltian school was introduced fully in America. The
Gestaltian school, or the organismic school as it came to
be known in America, on its part, advocated that the
individual reacts and functions as a whole. It intro­
duced the importance of "insight" in man's reaction to
his environment and viewed the individual as a "dynamic
whole" capable of acting in terms of purposes or goals.

These explanations had a far-reaching impact on
curricular organization, classroom instruction, evaluation,
and, most important of all, on the teachers' concept of
the nature of their students and of themselves. A great
number of experiments dealing in the precepts, images,
memories, concepts, emotions, attitudes, and on the
processes of associative thinking, concept formation,
problem-solving, and the improvement of thinking ability,
and other topics were carried on to clarify the processes
involved in thinking.30

Another important factor that needs to be mentioned
in this connection is the contribution of biology in the
evolutionary theory of Darwin. It is commonplace to

29(contd)Theory and Practice. (Columbus: The Ohio
State University Press, 1925).
30Russell, op. cit., p. 426. Percival M. Symonds,
Education and the Psychology of Thinking (New York:
McGraw-Hill, 1936); W. E. Vinacke, The Psychology of
discuss the impact of evolution on human thinking. But it may be worthwhile to paraphrase what Randall has said. Evolution pointed to the importance of detailed causal analysis of the specific processes of change. Men have come to examine the process itself—what it is, what it does. Indeed, it sets the record that it is more fruitful to search for the infinity of finite truths than toil to describe the finite number of infinite truths. It brought a new emphasis on the methods and attitudes of the biological and psychological sciences; it brought to light a new emphasis on the complexity of organization in beliefs and shades of differentiation, introduced a new scale of values, and it reinforced the humanistic and naturalistic attitude.31

Another important trend to note is the large number of experiments undertaken in connection with the reflective thinking process under such topics as "problem-solving," "critical thinking," "creative thinking," "scientific method," and others. This, of course, is in line with the great surge of creating a science of education by educators. Furthermore, the twentieth century witnessed the birth and spread of what come to be

called "Progressive Education" which had its strong impact in the actualization of the newer interpretations of reflective thinking in classrooms.

One of the greatest and most influential thinkers of this period, and perhaps the most ardent supporter of the development of reflective thinking as an educational aim, was John Dewey (1859-1952). From the writer's review of the literature in this particular phase of the investigation, it would not be an exaggeration to state that all major discussions of reflective thinking have been influenced, in one way or the other, by Dewey's book, *How We Think*. It would be appropriate, therefore, to include an extended discussion of this thinker, particularly since the investigator is using his definition of reflective thinking as a basis of the study.

Dewey, of course, built upon the works of such great thinkers as John Stuart Mill, Herbert Spencer, William James, Friedrich Herbart, and others. His own original contributions in philosophy, psychology, and pedagogy are, however, numerous and far-reaching.

He formulated and extended the concept of democracy to comprehend the whole way of life of a society, instead of limiting it to a way of organizing government. He held that the major goal of life was the perpetuation
and refinement of this way of life. The school, in this view, should not only teach about democracy, but that it should exemplify democracy by living it in its everyday school life.

Dewey's theory of knowledge was not altogether new; it was a confirmation and refinement of some past thinkers, beginning with Bacon. The way the individual comes to know, was not also an outright invention of Dewey. But he gave it foundation, impetus, a new momentum. To Dewey the individual has the dynamic ability to adjust to a dynamic environment. And the use of the reflective method in the process of adjustment is one of the highest traits that man possesses. What is this reflective process? What is reflective thinking? We have briefly explained this process in the previous chapter. It is sufficient as a recapitulation to state simply that reflective thinking,

in distinction from other operations to which we apply the name of thought, involves, (1) a state of doubt, hesitation, perplexity, mental difficulty, in which thinking originates, and (2) an act of searching, hunting, inquiry, to find and dispose of the perplexity. 32

Thinking does not take place in a vacuum, it arises out of man's struggle. Dewey therefore affirms the importance of subject-matter. Thus he states,

1. In experimental knowing, the antecedent is always the subject-matter of some experience which has its origin in natural causes, but which, not having been controlled in its occurrence, is uncertain and problematic. Original objects of experience are produced by the natural interactions of organism and environment and in themselves are neither sensible, conceptual nor a mixture of the two...

2. The distinction between sense-data and interpretative ideas is deliberative, instituted by the process of inquiry for the sake of carrying it forward to an adequately tested conclusion, one with a title to acceptance.33

Dewey makes reflective thinking a continuous affair. Man always feels problems that he has to solve, and he does so by involving himself, his whole dynamic organism, with his equally dynamic problematic environment. Thus, because of such continuous interaction, and because of such interaction between a whole organism and the environment, Dewey establishes and affirms the monistic nature of man rather than the dualistic nature of man held by Descartes and others.

Recognition of the importance of reflective thinking should lead school people to devise practical ways to

develop the students' ability to think. As we noted earlier Dewey has said that

no one doubts, theoretically, the importance of fostering in school good habits of thinking. But apart from the fact that the acknowledge­ment is not so great in practice as in theory, there is not adequate theoretical recognition that all which the school can or need do for pupils, so far as their minds are concerned (that is, leaving out certain specialized muscular abilities), is to develop their ability to think.34

He suggested several reasons why reflective thinking should be an educational aim.

1. Reflective thinking makes possible action with a deliberate, intentional and conscious aim. It emancipates us from impulsive, routine responses.
2. Reflective thinking makes possible systematic preparations and inventions.
3. Reflective thinking enriches things with meanings.35

He went further and declared that thinking is indeed the method of learning. In a very lucid and significant passage he asserts that

the sole direct path to enduring improvement in the methods of instruction and learning consists in centering upon the conditions which exact, promote, and test thinking. Thinking is the method of intelligent learning, of


learning that employs and rewards mind. We speak, legitimately enough, about the method of thinking, but the important thing to bear in mind about method is that thinking is method, the method of intelligent experience in the course which it takes.36

Teachers, therefore, should provide students with meaningful experiences, and create a reflective atmosphere to stimulate thinking. They should use in short, methods to encourage reflective thinking. But above all they themselves should use the method of reflective thinking, of intelligent learning in their classrooms. By identifying thinking as method, Dewey established a happy balance, a harmonious transition between theory and practice. No other writer that this writer is aware of has written so lucidly, comprehensively, and extensively in this field as has John Dewey. But Dewey's contributions, apart from his experimental school at the University of Chicago, had to wait for experimental verification, and methodological handling by his followers, to whom we now turn our attention.

Many educators have tried to devise ways of teaching students to think effectively. Others have conducted experiments to determine the relative effectiveness of

one approach over another. We thus need to keep in sight the contributions and influences in methodology of such educators as Comenius, Locke, Rousseau, Pestalozzi, Herbart, Froebel, and McMurry. In later years, the works of Edward Lee Thorndike, S. C. Parker, William Heard Kilpatrick, Henry C. Morrison and others deserve mention.37 As a result of their contribution, such practices as the project method, the socialized recitation, unit teaching, and general methods were beginning to be used here and there sporadically. As a matter of fact so much has been written in the field that Alberty, after a review of the literature, formulated the following generalizations concerning general method derived from democratic values, the psychology of learning, and the newer classroom practices:

1. The concept of the complete act of thought which involves, perplexity, confusion...provides the key to an effective classroom procedure.

2. The complete act of thought describes not only the way an individual goes about resolving a difficulty, but also describes the way a group with a common problem operates in order to find a solution to its problem.

3. An effective teaching procedure recognizes the unity of various learning products, ... and treats them as integral parts of the learning situation.

4. The ideals of democracy, the dynamic nature of the individual, the basic principles of motivation suggest that an effective teaching procedure gives a large place to cooperative purposing, planning, working, and evaluating.

5. An effective teaching procedure should take into account the wide range of individual differences which characterizes all groups, however common their purposes may be.

6. An effective teaching procedure should be sufficiently flexible to deal with a wide variety of learning activities.

7. An effective teaching procedure should facilitate the use of a wide variety of resources, such as ....

8. An effective teaching procedure draws freely upon materials from appropriate fields of knowledge. 38

Furthermore, many educators have imaginatively undertaken actual experimentation to test the value of reflective thinking and its improvement as a result of a direct instructional provision. Harold Fawcett 39 in 1938 undertook a study in which geometric proof was used to cultivate


critical and reflective thought and to evaluate the effect of such experiences on the thinking of the pupils. He devised, selected, and arranged methods and materials which made it possible for students to reason about the subject matter of geometry in their own way. As a result of a careful evaluation he arrived at the following conclusions: (1) mathematical method illustrated by a small number of theorems yields a control of the subject matter of geometry at least equal to that obtained from the usual formal course; (2) by following the procedures used it is possible to improve the reflective thinking of secondary school pupils; (3) this improvement in the pupils' ability for reflective thinking is general in character and transfers to a variety of situations; and, (4) the usual formal course in demonstrative geometry does not improve the reflective thinking of the pupils.

Gilbert Ulmer undertook a study in seven high schools to evaluate the results obtained by a number of high school geometry teachers in different localities who used a method of teaching geometry in which emphasis was placed upon the cultivation of reflective thinking. As a result of the study he was able to state that the results

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of the three equated groups on the reasoning tests showed no measurable gain in reasoning in the geometry control group, and a marked gain in the experimental group. An interesting aspect of this study was its indication that

(1) it is possible for high school geometry teachers, under normal classroom conditions, to teach in such a way as to cultivate reflective thinking, ... that pupils at all I.Q. levels are capable of profiting from such instruction. (2) the results also indicate that even what is commonly regarded as superior geometry teaching has little effect upon pupils' behavior in the direction of reflective thinking unless definite provisions are made to study methods of thinking as an important end in itself.41

Edward M. Glaser42 conducted a significant study with a three-forked purpose, one of which was to develop and present materials and illustrate teaching procedures which may be used effectively by teachers of upper-grade elementary, secondary, and college students to cultivate a spirit of inquiry and to stimulate growth in ability to think critically. As a result of carefully controlled experimentation he presented fourteen conclusions, four of which are here reported. (1) The average gain on a

41 Ibíd., p. 25.
battery of critical thinking tests of the four experimental classes after ten weeks was significantly greater than the average gain of the four control classes on the same tests, (2) The improvement in ability to think critically appears to be somewhat general in character, (3) The component abilities involved in critical thinking and measured by the tests developed in connection with this study were found to correlate positively with one another. (4) While there is a tendency for the more intelligent members of a group (as measured by the Otis Intelligence Test) to profit most from the suggested training in critical thinking, this is only a group trend. Individuals with IQ.'s of less than 100 are found among those who profit the most from the training.

With regard to the development of instructional materials to develop skills of reflective thinking, Anderson, Marcham, and Dunn\(^4\) conducted a study the purpose of which was to evaluate curriculum materials and teaching procedures in developing reflective thinking in the field of social studies. As a result of their

findings the authors stated that, in general, students using the prepared instructional material, achieved better than those not using them.

Recently, George Hudson Hyram[^4] undertook an experimental study to test the effectiveness of a special instructional procedure designed specifically to teach upper grade pupils in the elementary school how to think logically. He found that the experimental group was significantly better than the control group in logical reasoning.

These are but samples of the many experimental studies undertaken. But most tend to agree (1) that reflective thinking abilities can be improved as a result of instruction; (2) that certain instructional materials and classroom procedures are better for developing abilities in reflective thinking; (3) that the attainment of the educational objective of developing reflective thinking will come when schools begin to teach for it; and, (4) that all students of varying mental abilities seem to profit by such direct instructional provision.

It would be beyond the scope of the present chapter to report the findings of all the major studies dealing

with the topic. As there are many reports that summarize the findings of many such studies it was thought best to report the generalizations reached by a few of these authors before advancing certain generalizations that bear on the present status of reflective thinking as an educational aim on the basis of the historical outline covered in the chapter.

Accordingly, three works have been chosen for a report. Among these, one summarizes studies before 1940; two deal with recent situations, including the major previous studies.

Having reviewed the literature extensively in connection with his experimental study, Glaser arrived at these generalizations:

1. The studies by Curtis, Caldwell and Lundeen, Downing, Noll, Peterson, Powers, Sinclair and Tolman, and Zepf in the field of science training; by Dailey, Fawcett, Hall, Lazar, Parker, Perry, and Shendarker in the field of mathematics; and by Barlow, Biddle, Hill, Jewett, Jones, Salisbury, Teller, White and Wrightstone in the field of English, Logic, and the social studies, all point to the conclusion that the content alone of any subject is not likely to develop a generalized ability to think critically.

2. In general the research indicates that if the objective is to develop in pupils an attitude of "reasonableness" and regard

\[45\] Glaser, Ibid., pp. 69-72.
for the weight of evidence and to develop ability to think critically about controversial problems, then the component attitudes and abilities involved in thinking critically about such problems must be set up as definite goals of instruction. Specific training for the given objectives should be provided, and the processes and principles of reasoning which are involved must be made clear and usable to the students...

3. Training in abstracting, analyzing, outlining, summarizing and generalizing have been found effective for improving both reasoning and reading ability.

4. One's ability to apply knowledge to the solution of given problems is not in direct proportion to one's knowledge of facts in the field pertaining to those problems...In general, however, persons tend to make the fewest errors in judgment and reasoning in the situations in which they have had the most experience and concerning which they do know the pertinent facts.

5. Attitudes of open-mindedness, intellectual responsibility, and a desire to have evidence for one's beliefs, as well as knowledge of the principles of logical reasoning and specific skills in applying those principles, are susceptible to appreciable improvement.

6. The efficacy of given training to improve ability to think critically and the amount and quality of transfer which occurs will be greatly influenced by: (1) the method of presentation, (2) the degree to which self-activity and personal experience are induced, (3) the means of furnishing precision, definiteness, and stability to the course of this activity, (4) the extent to which the desired outcomes are set up as definite goals of instruction (5) the extent to which the processes of reasoning and guiding principles are made clear to the
students, and (6) the degree of relationship or similarity between specific elements in the training and their existence in the new situations to which transfer is desired.

After having reviewed the findings of the literature in such topics as the nature of thinking, training in thinking, measuring reasoning the need for improved instructional procedures, thinking and transfer, instructional materials suited to the development of reasoning, George Hudson Hyram⁴⁶ came to the following conclusions.

1. Studies in the area of the process of thinking have not resulted generally in agreement regarding the psychological nature of thinking.

2. It is suggested generally that there is need for improved and more effective instructional methods designed to teach pupils directly how to think.

3. The possibility of teaching children how to think has been well established.

4. Training in the techniques of making generalizations is the key to the development of a general reasoning ability which will be adaptable— transferable—to other varied situations.

5. The type of instruction most effective in the development of an ability to think correctly in children should, as indicated by the findings from research on transfer, lead pupils to formulate generalizations based on the principle of correct thinking.

Herbert F. A. Smith*7 in a recent article advanced the following generalizations on the basis of his review of over twenty-eight studies dealing with the elements of reflective thinking, relationship of the ability to do reflective thinking to measured intelligence and transfer of learning.

1. The ability to do reflective thinking consists of specific skills which can be acquired, to varying degrees and through suitable instruction, by high school pupils of all ability levels.

2. The abilities which go to make up reflective thinking are separable and measurable.

3. The abilities involved in reflective thinking correlate with measured intelligence but the correlation is not high.

4. The ability to do reflective thinking is very likely to be accompanied by good academic marks but good marks do not necessarily indicate the presence of this ability.

5. A good memorizer is not necessarily a good thinker.

6. The ability to do reflective thinking is present in a child younger than one of Junior high school age.

7. No significant differences exist between the sexes as far as the ability to think reflectively is concerned.

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8. Pupils who learn quickly and organize their material tend to retain what they learn better than do the pupils who learn slowly.

9. The ability to do reflective thinking on the part of the high school pupil depends to a large extent on the training he has had in the elements of the process.

10. The ability to think reflectively is increased when the learner is afforded the opportunity of self-expression and uses this opportunity well.

11. The teacher does little to help the child think reflectively by pointing out generalizations to him.

12. We have not yet learned to teach the elements of reflective thinking nor have we accepted them as valid aims of teaching in the high school.

The conclusions mentioned in the above three studies were very largely the results of actual classroom experimentation on the various phases of reflective thinking.

The summaries of the results of the three studies reported above recapitulate the major findings put forward by different writers, philosophers, educators, psychologists, and historians. In the light of these summaries and the brief survey of the historical development of reflective thinking as an educational aim the following generalizations may be made.
1. The tenet that reflective thinking is an important educational aim has been advocated continuously from the Greek era to the present day.

2. Not until thinkers began to explain what thinking is in terms of behavioral manifestations did we get a tentative workable explanation of the processes involved.

3. Though there is not to date an abundance of experimentation to determine the processes of thinking, the explanation suggested by John Dewey is the one that is prevalent in educational writings and experimentations.

4. Important factors, such as conceptions of the mind, advances in biology, psychology, have been influential in shaping the present status of the meaning of reflective thinking.

5. Great advances made by science in improving standards of life have contributed to the acceleration of the acceptance of reflective thinking as an educational aim.

6. Reflective thinking is the method of intelligent learning and thinking is method. The development of reflective thinking, therefore, is not inherent in one subject matter or the other.

7. Some of the significant advances made in developing reflective thinking have been the consequence of changes in teaching method and curriculum content introduced in the classrooms.
8. Reflective thinking can be improved significantly as a result of instruction.

9. If the schools consider the development of reflective thinking to be an important educational objective, then it should be set up as a definite goal of instruction and experiences arranged in reflective terms with thinking resulting as they are carried forward.

10. There is need for a more effective instructional method designed to develop the ability of all students to think reflectively.
CHAPTER III

OBSTACLES TO THE DEVELOPMENT OF REFLECTIVE THINKING REPORTED IN THE LITERATURE

Introduction

The historical development of reflective thinking as an educational objective discussed in Chapter II, did not result at least in modern terms, in ways to implement it at the classroom level. One of the major purposes of this study, as was stated in Chapter I is the identification and validation of possible major obstacles that school people encounter in developing reflective thinking and the following procedures were instituted in an effort to attain it.

1. As a first step the literature dealing with this phase of the study was surveyed and tentative list of obstacles was formulated.

2. On the basis of the major obstacles listed a questionnaire was prepared and sent to outstanding leaders in education for their reactions and additional suggestions.

3. In the light of these reactions a revised questionnaire was prepared and distributed to a selected number of forward-looking teachers for further
validation and for the additional purpose of obtaining illustrations of successful practices.
This section discusses the first procedure, leaving the second and the third to the next sections.

Review of Literature

Although discussion of the obstacles (impediments, blocks, obstructions, deterrents) to the development of reflective thinking has only appeared recently in the literature, there have been certain pertinent discussions in the past. David Hume, for instance, stated that prejudice was a destructive element of sound judgments and perverted intellectual operations.

Francis Bacon\(^1\) located and discussed "four classes of idols which beset man's minds,"—namely idols of the tribe, idols of the cave, idols of the market-place, and idols of the theatre. These correspond more or less to (1) errors arising from weakness of human nature, (2) errors arising from the peculiar make-up and background of the individual himself, (3) errors arising from the intercourse and association of people and the improper

use and understanding of language, and, finally, (4) errors arising from the influences of various dogmas, philosophies, and the like. John Locke\(^2\) later categorized the causes of errors into four parts: (1) lack of proof or evidence, (2) lack of ability to use this evidence fittingly, (3) lack of desire or motivation to use this evidence, and (4) the use of the wrong measures of probability or the lack of desire to change opinion even after the falsity of the opinion has been established. Besides these, there have been considerable discussion of obstacles, or causes of errors, identified as logical fallacies.

McBurney and Hance\(^3\) present an extended discussion of some causes of obstacles, logical fallacies, and what they termed 'strategems.' These are divided into personal and social, as follows: the personal causes include inability to observe, to remember, to organize, to analyze, to make hypotheses, to synthesize and to appraise, as well as the presence of self-interest, self-esteem, prejudice, and the tendency to rationalize. Such traits as lack of


interest in finding answers, gullibility, stereotyped thinking, excessive dependence upon other persons' ideas, lack of patience, and the presence of excessive emotion, were also mentioned. Under the social causes of obstacles the presence of group pressures was the major one.

These authors discuss strategems in language, and outside of it at length. Inexactness in language, such as ambiguity, vagueness, accentuation, amphibiology, and coloring in language, are mentioned under strategems in language. Strategems of censorship, such as errors in fact, half-facts, overstatement or understatement; strategems of diversion, such as fastening on a trivial point, using an inconsequent argument, using a contrary instance, using an irrelevant objection, appealing to interests or motives, using a false syllogism, deferring to an authority or tradition, and varieties of strategems of manipulation, etc. are treated as obstacles to thinking.

Lyman,^4 Chase,^5 Altick,^6 Schuster,^7 Copi,^8 Cohen and

7Cynthia A. Schuster, "Can We Teach the High-School Student to Think?" Educational Research Bulletin XXXVII (April, 1958), p. 91-100+.
Nagel,9 Black,10 Beardsley,11 Glaser,12 Long,13 Symonds,14 and many others have written extensively about the way in which logical fallacies become obstacles to the development of reflective thinking. Such points as: making false assumptions, using unsupported assertions, false analogy, overgeneralization, incorrect causal (cause-effect) relationships, raising irrelevant objections, arguing beside the point, shifting ground, attacking personality rather than issue, arguing in circles, using black-white or either-or proposition, using guilt by association, introducing emotion in place of evidence or introducing irrelevant or unproved evidence, suppressing and destroying evidence, using fallacious syllogisms, and shifting meaning were mentioned. Chase


characterized them as impediments to thinking, and con­sidered them as "road blocks that throw us off the track and detour our reasoning powers."15 Schuster wrote of
them as
fallacies which permeate the undisciplined thought of everyday discussion, of political addresses, of newspaper articles, journals, and even textbooks, despite the fact that the misleading character of these fallacies can easily be made clear to most ten year olds.16

A great many authors note the influences that arise out of emotions, personal or ego involvement, and certain attitudes generally inimical to thinking.

Nichols17 holds that ignorance and error, credulity, intolerance, prejudice and bias, excitement and passion, hatreds and loves, and self-interest disturb the in­tellectual processes and lead to falsity and error. Morton18 equally emphasizes the influences of personal conviction on logical reasoning but adds two social elements, the extensive use of advertisement and propa­ganda as conditioning habit formation.

15Chase, op. cit., p. 151.
16Schuster, op. cit., p. 93.
Asch\textsuperscript{19} lends support to Morton's statement, as does Fellows,\textsuperscript{20} who nevertheless adds censorship from governmental and non-governmental sources, as well as censorship exercised by indirect controls of mass media, as factors likely to affect the development of reflective thinking. The tendency of motion picture producers, radio station managers, advertising executives, newspaper publishers to delete or slant material in accordance with either their own interests, or those of pressure groups, create a serious threat to the promotion of improved problem-solving methods.

Jastrow,\textsuperscript{21} Dimnet,\textsuperscript{22} Clarke,\textsuperscript{23} Colvin,\textsuperscript{24} Thistlethwaite,\textsuperscript{25} Briggs,\textsuperscript{26} Bowers,\textsuperscript{27} Blackwood\textsuperscript{28} and others

\textsuperscript{21}Joseph Jastrow, "Impediments of Thought," Proceedings of the Ohio State Educational Conference, Ninth Annual Session, (Columbus, Ohio: The Ohio State University, 1929), pp. 133-137.
\textsuperscript{26}Thomas H. Briggs, "What the Emotions Do to Our Thinking," Teachers College Record XXXVI (February, 1935), p. 372-379. For 27 and 28 see page 79.
concur with the foregoing but extend the discussion by considering such factors as the relation between feeling and thinking, the extreme unwillingness to form conclusions, the extreme desire to arrive at conclusions rather than suspend judgment, the presence of insecurity resulting from such causes as inferiority complexes, the presence of an emotionalized attitude to accept tradition, naive dogma, or superstition. Briggs contends that emotionalized attitudes are potent influences on the intellect, are of tremendous influence in determining the interpretation of what one observes, hears or reads, and determines to a large extent the retention of ideas.

Morton defines the effect of personal conviction or emotion on logical thinking as "the influence of the particular attitude which a person has concerning a situation." He divides the effect which personal convictions and emotions have on logical thinking in the teaching situation into two areas. "There is the effect which it may have on the teaching efficiency of the teacher, and the effect it may have on the ability and motivation of her pupils."  

29 James T. Morton, "What the Teacher Needs to Know about the Influences of Personal Conviction or other(p.30)
studies have been undertaken to determine the influence of emotion as a coloring effect on human reasoning.

Birch and Rabinowitz conducted an experiment to determine whether past experiences hinder problem-solving processes. Although the authors warned that the role played by past experience in productive thinking cannot be uniformly identified until the nature of the past experience is clearly understood, they reported that their results revealed that the specific prior experience limited the perception of object properties.


and made the experienced materials less available as problem solving tools. The authors further stated that "past experience may become a hindrance and an obstacle which blocks productive thinking and reduces behavior to stereotyped and fruitless essay."32

Reports had been made by many writers suggesting obstacles to reflective thinking in a wide variety of areas touching community situations and individual and group dispositions. Dewey,33 for instance, dealt directly with a variety of these obstacles in many of his writings. Many more could further be safely inferred. He considered as general causes of bad thinking: (1) primitive credulity—(natural tendency to believe anything that is suggested unless there is overpowering evidence to the contrary); (2) the tendency to believe that which is in harmony with desire; (3) failure to examine and test ideas because of personal attitudes; (4) the tendency to make sweeping assertions when generalizing; (5) social influences that have nothing to do directly with the truth or falsity of the issue; (6) reverence for authorities as a determinant of beliefs contrary to the operation of intelligent thought; and (7) the desire to be in harmony with others,

32Ibid., p. 121.
33Dewey, How We Think, op. cit., pp. 23-34.
which may lead the individual to an acceptance of prejudices and weakening of his independence of judgment.

Dewey argued that there is no one golden road to thinking. "In any case," he wrote,

there is a certain feeling after the way to be followed; a tentative picking out of certain qualities to see what emphasis upon them would lead to; a willingness to hold final appraisal in suspense; willingness to reject the factors entirely relegate them to a different position in the evidential scheme if other features yield more solvent suggestions. Alertness, flexibility, curiosity are the essentials; dogmatism, rigidity, prejudice, caprice, arising from routine, passion and flippancy, are fatal.\textsuperscript{34}

Harvill\textsuperscript{35} presents inability to recognize and evaluate propaganda, proneness to accept unreliable sources prevalent in many communities, the tendency to look for a single solution to a complex problem, the existence of negative attitudes of members of the community in regard to intellectual training, as stumbling blocks to the development of good habits of thinking. Kerlin\textsuperscript{36} mentions as obstacles to the development of thinking, or, as he terms them, "hindrances to thinking,"

\textsuperscript{34}Ibid., p. 127.

\textsuperscript{35}Harris Harvill, "Obstacles to Thinking," \textit{Peabody Journal of Education}, XXII (September, 1944), p. 105-109.

\textsuperscript{36}R. T. Kerlin, "Hindrances to Thinking," \textit{American Teacher}, XVII (June, 1933), p. 8-9.
the difficulty of creative thinking, lack of sufficient knowledge, tradition, lack of endurance in the state of mind of uncertainty, the desire to make present ideas agree with former ideas, self-conceit or mental obstinacy, humility as a result of inferiority complex and presence of fear.

Mehl\textsuperscript{37} in a recent article reported as factors which make motivation for critical thinking difficult to effect; the limited number of persons who think critically, the conforming pressure of group's customs, values and practices, the taking over of the function of thinking by mass communication media and the lack of opportunity given to students to think reflectively.

Robinson\textsuperscript{38} divides his consideration of obstacles to thinking as follows: (1) hindrances to individual thinking and (2) hindrances to group thinking. Under the first category he includes: lack of adequate stimulus, lack of health or energy for adequate response, hereditary limitations, physical and social discomforts and distortions, drives, urges, wishes, emotions, false or inadequate


perceptions, lack of command of language as an instrument of thought, prevalence of propaganda, failure to understand, properly evaluate and practice the art of thinking, failure of society to furnish adequate training in thinking, and the difficulty of transferring ability to think in one field to another field. Under the second category he lists: lack of common present stimulus, individual differences in personality traits, individual differences in prior experience, prejudices against persons, suspicion, mental obstinacy, existence of pressure groups, failure of society to furnish adequate training in group thinking, and outmoded habits of conducting discussions.

Symonds in a chapter entitled, "Imperfections in Thinking," discusses obstacles to thinking under the two broad categories of "immaturity of thinking," and "error in thinking." Symonds is rather pessimistic. He believes "the errors and pitfalls of the thinking process of the human mind are legion," adding that "to catalog them completely or even adequately cannot be accomplished in the bounds of this chapter but some of the main directions of immaturity and error can be mentioned." As major obstacles and causes of imperfect thinking he mentions

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imperfect or inadequate analysis, selection, association, generalization, and inference.

Russell\(^{40}\) believes the symbolic nature of thinking to be one of the impediments to clear, accurate thinking. In his discussion of concept formation he presents the following errors as obstacles: errors in the percepts from which the concepts emerge, confusion between images and memories, lack of experience in checking or validating generalizations, and overconfidence in the results of one's observations. Blackwood\(^{41}\) points to physical dispositions, and temporary or chronic physical health conditions as common causes of errors in thinking.

A great many educators focus their attention on the obstacles to thinking that arise within the educational system. Such factors as teacher competency, provision of instructional materials, curricular organization, teaching methods, administrative facilities, general school atmosphere, and the like are viewed as obstacles.

Bostwick\(^{42}\) says that as "individuals grow in the environment of home, school and neighborhood, they cannot escape meeting some obstacles to critical thinking."

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\(^{41}\) Blackwood, *op. cit.*

An authoritarian home, a *laissez-faire* environment, pressure groups, persistent adherence to the influence of the past impede the development of reflective thinking. Thinking is stultified and curiosity, the wellspring of thinking is deadened by emphasis on rote memorization of facts, on drills divorced from practical application, meaningless filling in of workbooks, implicit rewards for agreeing with teachers, explicit penalties for independent thinking, challenging the status quo and the pursuit of topics (or as teachers may call them, "problems") which have not meaning to the pupils. The author further considers inefficient communication through words as another obstacle.

Paine\(^4^3\) argues that the deeper and underlying philosophical assumptions are effective hurdles that obstruct the development of reflective thinking. He lists the following obstacles: the purpose of education aimed at "selling" certain ideals, preconceptions, and habits; the purpose of bringing the young into conformity with the usages and skills and habituations of present-day society; the widespread tenet that obedience to teachers or parents or elders is the right thing to do; the widespread emphasis on the preservation of the past.

heritage, rather than reconstructing it, leading to the use of the time-honored recitation method.

Cross formulated the following answer in response to the question: "If the problem approach is as important as so many writers have claimed, why has it caught on so slowly?": (1) the fact that it appeared recently on the scene as compared to most other entrenched educational approaches; (2) the hesitancy of inexperienced teachers to use an approach they do not understand fully; (3) the lack of community understanding of what is involved in a problem-solving situation; (4) the resistance of many teachers to use the problem-solving approach in classrooms, particularly in the earlier grades, because of pupil immaturity; (5) the lack of recognition by some of the needs for instruction in the steps of problem-solving; (6) the popular statement that it is more difficult to use a problem-centered approach in some classes than in others; (7) the unwillingness of instructors to give the necessary amount of time to problem-solving experiences because of crowded schedules, the need to cover given amounts of material, and other reasons; (8) the rigid use of textbooks as ends rather than as sources of common

reference and points of departure; and, (9) the lack of appropriate instruments to evaluate the achievement and progress of students in reflective thinking.

He might well have added that the development of the public school system, open to serve all the children of all of the people, as a factor in itself affecting the rapid and the easy acceptance of the problem-solving approach in schools, besides being a factor to the overcrowded classroom situation.

Richardson and Hayakawa mention such factors as the critical ones that operate against the development of reflective thinking: concern for covering the ground at the expense of other objectives, teachers' assumptions that the label, "problem" at the beginning of a section in a textbook or a set of directions in a laboratory manual becomes a genuine problem to the student to be solved as he reads and follows directions, the encouragement by teachers of stereotyped or conventional approaches, a lack of that understanding of the quality of science teaching which would encourage boys and girls to become

scientific in their thought and action, operating against the development of reflective thinking.

Skolnik\(^4\) views the textbook as an obstacle, as well as the overloading of subjects with required fragmentary facts, compartmentalization of subject matter, and failure on the part of teachers to agree on the nature of thinking, as further points worthy of serious consideration.

There are as reported above, many conditions in the schools which interfere with realistic work in developing young people's ability to think reflectively. Taba\(^4\) concludes that many of these have to do with the ways teaching and the curriculum are organized. In general, she believes that the curriculum content is organized for purposes other than the facilitation of reflective thinking, that it is laid out by the designation of areas to be covered and not by consideration of problems. Furthermore, the organization of the curriculum is such that the sequence is planned in terms of progressing, coverage of different subjects from one to the other.


Rogers\textsuperscript{49} considers some of the above factors in detail. She states that the following factors hinder the development of reflective thinking: (1) lack of proper psychological climate or classroom atmosphere; (2) teacher-dominated classroom; (3) presence and practice of dull, lifeless lesson content; (4) insistence on the part of many teachers that students perform tasks according to a set pattern involving specific steps carried out in an invariable order; and, (5) insistence on mechanical perfection of expression together with the menace of passive entertainment.

Long\textsuperscript{50}, who considers a number of the factors which have been stated above by one author or another to be important contends that lack of understanding and use of reflective thinking by teachers, lack of skill in guiding students in the development of reflective thinking and the presence of emotion and prejudice in teachers are the more serious impediments to the development of reflective thinking.


Blackwood\textsuperscript{51} recognizes the use of instructional materials or questions or problems inappropriate to the students' intellectual or emotional level and experiential background as a common cause of difficulty in developing reflective thinking.

Glaser, having reviewed the various hypotheses advanced in the literature as causes of error in thinking, briefly summarized his finding as follows:

(1) the over-potency or under-potency of some elements in the situation in calling out the response, (2) the effect of temporary or chronic physiological or emotional conditions, (3) material inappropriate to the intellectual or educational level or the experiential background of the individual concerned, (4) the interference of an inflexible set or habitual orientation to a situation (or given material) which prevents the viewing of the situation (or material) in terms of new relationships, (5) faulty language comprehension, or the lack of attention, leading to incorrect concept formation or perception of the problem, (6) the influence of wishes, prejudices, and unconscious desires in steering the thinking process, (7) failure to combine the elements of the situation into appropriate patterns, (8) logical errors such as making false assumptions, false observation, drawing unwarranted generalizations..., (9) lack of order and system in thinking, and (10) failure to isolate the define the values operating in the situation.\textsuperscript{52}

\textsuperscript{51}Blackwood, \textit{op. cit.}

\textsuperscript{52}Glaser, \textit{op. cit.}, p. 29.
Bloom and Broder⁵³ undertook the interesting experiment of studying the problem-solving processes of college students. Though their study does not deal with obstacles specifically, they discuss some of the major sources of difficulty in the problem-solving habit of such a group of students. The difficulties noted by them have at least two advantages over many of the others reported. They are difficulties encountered in the process of problem-solving and they are specific. The difficulties reported include: (1) the difficulty of the students in ascertaining what they are required to do; (2) their lack of objectivity in dealing with problems; (3) their inability to reason logically and systematically; (4) their inability to complete a chain of reasoning; and, (5) their lack of necessary subject-matter knowledge. Unfortunately, this type of study is rare in the literature, but if pursued it may open a new pattern of obstacles.

Rugg⁵⁴ has mentioned sex and home life, intimate problems of personal living, controversial issues,


religion, and related topics as being shunned areas of inquiry, i.e. their discussion has been considered taboo. More recently Hunt and Metcalf have pointed to "closed areas" (areas of belief and behavior which are largely closed to reflective thought) as an important feature of American culture. The authors further assert that these closed areas are saturated with prejudices and taboos, and that people react to them blindly and emotionally. These areas include: morality, and religion, sex, race and minority problems, social class, nationalism and patriotism and at times with certain phases of economics and politics as well as pressure groups.

In addition to these closed areas, teachers and school administrators have been influenced by the presence of anxieties in community, national and international life. Often these anxieties are manifested in "a sense of bewilderment, of being lost, of having shelters destroyed, guards beaten down, of helplessness in the face of overpowering if ill-defined threats." These

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get more serious when administrators fail to support teachers when they become targets of unfair criticisms.

So says Hullfish,

Those who administer should attend it with especial care. It is their responsibility to make it possible for those who teach to do their work well; hence, they must be prepared, as occasions demand, to protect teachers against unfair attacks by the unscrupulous and the ignorant.

The presence of anxieties at the local, national and international levels, as current happenings such as McCarthyism, integration issues, Sputniks, the Middle East crisis, and the like, illustrate that the problem of obstacles to the development of reflective thinking is more critical and urgent than before.

The studies reported above dealing with obstacles to the development of reflective thinking, do not exhaust the literature, they include, however, the major works directed specifically to the topic.

**Summary of the Literature Dealing with Obstacles**

I. These studies reveal that most of the suggestions were advanced as hypotheses and very few of them were the results of experimentation. This fact reveals a wide open field, therefore, for further study and experimentation.

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II. The following are summarizing generalizations regarding the obstacles derived from the literature.

1. The philosophic tenet that the major purpose of education is to transmit the social heritage and therefore emphasize the achievement of the past, instills fixed values. (Paine, Robinson, Bostock, Skilnik, Dewey, Long, Richardson, Taba.)

2. Lack of understanding of reflective thinking and its role in education by many teachers encourages the perpetuation of stereotypes and conventional approaches to learning. (Cross, Hayakawa, Kerlin, Long, Mehl, Bestwick, Skilnik, Rogers, McBurney and Hauce.)

3. Because of the pressure of time teachers resort to teaching factual information and neglect reflective thinking. (Cross.)

4. The busy overburdened teacher does not have time to develop genuine instruments to appraise progress in reflective thinking. (Cross, Robinson.)

5. There is a paucity of instruments to appraise competencies which mark the reflective thinker and progress in reflective thinking. (Cross.)

6. The lack of adequate instructional materials and physical facilities restrict the scope of the use of reflective thinking. (Bostwick, Blackwood, Skolnik and Groff, Robinson, Glaser, Blackwood.)

7. Schools' practice in outlining the curriculum by designating subject matter to be covered rather than problems to be solved, inhibits the use of reflective thinking. (Bostwick, Skolnik and Groff, Cross, Dimnet, Richardson, Taba.)

8. The prevalent practice of following the textbook, coupled with the use of the time-honored recitation method tends to stifle creativity and originality. (Bostwick, Cross, Skolnik and Groff, Rogers, Hayakaw, Paine, Richardson.)
9. The use of instructional materials inappropriate to the intellectual level or experiential background of students, makes the use of reflective thinking difficult, if not impossible. (Glaser, Blackwood.)

10. The use of faulty language expression or comprehension and the lack of adequate terminology leads to incorrect concept or percept formation and inadequate understanding of the problem. (Bloom and Broder, Schuster, McBurney and Hance, Robinson, Russell, Bostwick, Bacon, Dewey, Glaser, Blackwood, Symonds.)

11. The belief that it is difficult, if not impossible, to use reflective thinking in certain grades because of students' immaturity restricts its use by many teachers. (Cross.)

12. The assumption that the label, "problem," at the beginning of a section in a textbook or other instructional material becomes a genuine problem to the student, results in the lack of the use of reflective thinking. (Long, Richardson.)

13. The disagreement among educators on the applicability of reflective thinking to all areas of living (e.g. esthetics, art, morals) restricts its use to certain areas of the school curriculum. (Cross, Hunt and Metcalf, Rugg.)

14.*The failure of teacher education institutions to prepare teachers and administrators who can use and initiate reflective thinking in their school program results in its noticeable absence in the secondary school. (Robinson, Taba.)

15.*Autocratic leadership of Boards of Education and school administrators discourage the use of reflective thinking by teachers. (Robinson, Bostwick, Dimnet, Kerlin, Paine, Tyson, Taba.)

16. The paucity of students' experiences in quality and quantity restricts the development of reflective thinking. (Bloom and Broder, Locke, Mehl, Dewey, Robinson, Russell, Rogers, Bacon, Colvin, Dimnet.)

*These two items were strongly implied in many of the writings but not explicitly stated.
17. Failure to generalize correctly due to the lack of sufficient data and the use of false authorities as well as the tendency to overgeneralize on the basis of a few data restrains the legitimate use of reflective thinking. (Bloom and Broder, Glaser, Long, Lyman, Symonds, Chase, Dewey.)

18. The drawing of inferences without realizing that there are uncontrolled variables in the experiment leads to wrong conclusions. (Glaser, Harvill, Long, Lyman, Symonds, Altick, Birch and Rabinowitz, Chase.)

19. Temporary or chronic physical and mental health conditions of students inhibits the effective use of reflective thinking. (Blackwood, Glaser.)

20. The introduction of emotion or feeling instead of evidence interferes with the choice of data, interpretation of what is observed, and the retention of ideas. (Morton, Nichols, Symonds, Tyson, Altick, Bacon, Briggs, Chase, Colvin, Blackwood, Jastrow, Kerlin, Long, Bostwick, Robinson, McBurney, Hance.)

21. Self-love and self-interest lead teachers or students to favor that side of the question which has practical significance for the individual. (Symonds, Tyson, Colvin, Glaser, Blackwood, Jastrow, Kerlin, Long, Nichols, Dimnet, McBurney and Hance.)

22. The existence of an inflexible set or habitual orientation to a situation prevents the viewing of the situation in terms of new relationships, or fresh patterns. (Tyson, Brich and Rabinowitz, Briggs, Dewey, Dimnet, Fellows, Glaser, Hayakawa, Mehl, Maier, Russell.)

23. The temporary existence of insecurity in teachers and students and the resulting failure to suspend judgment leads to slanted and prejudicial conclusions. (Tyson, Chase, Jastrow, Kerlin, Long, Dewey.)

24. The fear of arriving at conclusions that would impose loss and sacrifice of some kind, fear of being identified with dangerous radicalism or fear of peer disapproval interferes with intellectual exploration. (Colvin, Rogers, Kerlin.)
25. The use of rationalization by students and the lack of its early detection by teachers tends to conventionalize the stifle reflective thinking. (Morton.)

26. The presence of inferiority complexes discourages the healthy development of reflective thinking. (Dimnet.)

27. The desire to make present ideas agree with former ideas tends to restrain reflective thinking. (Tyson, Colvin, Long, Rogers.)

28. The presence of a fanatical attitude of mind in students excludes the consideration of a problem from its various facets and leads to the reinforcement of the conclusion previously held by students. (Dimnet, Tyson, Jastrow, Bostwick.)

29. The presence of emotional upset or psychological mental block minimizes the use of reflective thinking. (Blackwood.)

30. The active and extensive existence of social pressures (e.g. propaganda, advertising, pressure groups, etc.) in the community tends to influence people to accept opinion without further investigation. (Asch, Dewey, Fellows, Bostwick, Morton, McBurney and Hance.)

31. The existence of prejudice in the family and the community leads students to form opinions and reduces behavior to conventionality and stereotype. (Bacon, Bowere, Clarke, Dimnet, Glaser, Blackwood, Kerlin, Bostwick, Robinson, Symonds, Birch and Rabinowitz.)

32. Undue reliance on authority or reverence for authority results in determining the belief of students contrary to operations of intelligent thought. (Symonds, Chase, Colvin, Jastrow, Long, Bacon, Dewey, Harvill, Kerlin, Bostwick, Tyson.)

33. The lack of community understanding of what is involved in reflective thinking tends to restrict its widespread use by teachers and students. (Mehl, Harvill, Cross, Bostwick.)

34. The existence of the unquestioned acceptance of strong traditions, customs, ideals, creeds and institutions, makes inventiveness and originality exceedingly difficult. (Colvin, Dewey, Bacon, Hunt and Metcalf, Colvin, Fellows, Jastrow, Kerlin, Tyson.)
35. The extensive use of advertising through mass media tends to induce habit formation without investigation. (Rogers, Bostwick, Robinson, Morton.)

36. The presence of "shunned or closed" areas, (e.g. sex, communism) in the society or in certain communities considered outside the scope of reflective thinking, results in the lack of its use by teachers and students. (Rugg, Hunt and Metcalf.)

37. The prevalent influence of logical fallacies, such as the use of false analogy, incorrect causal relationship, etc., increases the difficulty of thinking reflectively. (Lyman, Symonds, Tyson, Altick, Chase, Harvill, Long, Schuster.)

38. The belief that what exists is best and the tendency of teachers, students and the community to believe anything that is suggested unless there is overpowering evidence to the contrary. (Tyson, Dewey, Symonds.)

39. The failure of many people in the school and community to use reflective thinking in their everyday life situations, creates a climate not conducive to the teaching of reflective thinking. (Taba, Dewey, Dimnet, Mehl, Robinson.)

The next chapter will deal with the formulation and validation of the list of obstacles to the development of reflective thinking on the basis of these thirty-nine generalizations arrived at from a study of the literature.
CHAPTER IV
FORMULATING AND VALIDATING THE LIST OF OBSTACLES TO THE DEVELOPMENT OF REFLECTIVE THINKING

Introduction
The last chapter presented a list of generalizations arrived at from the brief review of the literature on obstacles to the development of reflective thinking. This chapter presents the procedures and outcomes used in formulating and validating the list of the obstacles.

Initial Formulation of the List of Obstacles
The generalizations of the last chapter reveal a wide variety of factors as obstacles to the development of reflective thinking. Some of these generalizations deal with psychological processes, others with logical reasoning; some deal with students and teachers, and others with the community and the curricular situations of schools. As these generalizations stand, at least two procedures might be followed in formulating the list of obstacles—the formulation of the list in general areas and the formulating of the list in specific areas. After considering the possibilities of both of these procedures it was decided to follow the former for the following reasons. After an investigation it was found that there
are not enough studies of the latter category on which to base a list of obstacles. Secondly, as the purpose of the study is to identify and formulate areas of obstacles, the former would best fulfill this purpose. Furthermore, there were sufficient generalizations of the former category to warrant further exploration in the field.

Accordingly, comprehensive areas which, as much as possible included most of the major generalizations, were formulated.

In the formulation, the statements were left open-ended in an incomplete sentence form. The reason behind such a decision was the fact that, while a few of the items revealed in what way or ways they interfered with the development of reflective thinking, this was not true of many of them. These decisions having been made, twenty-six areas of statements were initially formulated.

These statements were prepared in questionnaire form, mimeographed and administered for an initial tryout to a graduate class taking courses in secondary education, and several professors who were contacted individually to react to the initial formulation. The class to which the questionnaire was administered included college instructors, county superintendents, secondary school teachers, full-time graduate students and state department administrative officials.
These persons were requested to rate each item on a five point rating scale, suggest additional obstacles, react to each item as to clarity, wording, ease of using the rating scale, and other pertinent comments.

The responses were analyzed and fruitful suggestions were incorporated. No new obstacle was mentioned and most of the items mentioned were in one way or another covered in the list. Many helpful suggestions were given with regard to mechanical details, such as wording and the addition of examples to clarify the meanings of the statements. In the light of these suggestions the list was revised and the items reduced to twenty-five. This undertaken, the initial phase of formulating the list of obstacles was concluded.

The major areas* are as follows:

1. Overemphasis by teachers and school authorities on the transmission of the social heritage as a major purpose of education.

2. Teachers' lack of understanding of reflective thinking and its role in individual and group behavior.

3. Teachers' lack of skill in guiding students in the development of reflective thinking.

4. Use by teachers of conventional, less time consuming methods of teaching (e.g. recitation, lecture) because of over-loaded schedules.

5. Lack of adequate instruments for evaluating progress of students in learning to think reflectively.

*See Appendix for a copy of the questionnaire.
6. Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students.

7. The fixed and prescribed nature of the school curriculum (e.g., courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved).

8. Students' use of faulty language expression or comprehension, and/or the lack of adequate vocabulary.

9. Autocratic leadership of boards of education and school administrators.

10. Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g., morals, religion, esthetics).

11. Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking in the school program.

12. Temporary or chronic physical and mental health conditions of students.

13. Students' emotions and feelings (e.g., wishes, desires, fears, self-interest, self-love).

14. Teachers' emotions and feelings (e.g., wishes, desires, fears, self-interest, self-love).

15. Students' disturbances and/or mental blocks.

16. Teachers' disturbances and/or mental blocks.

17. The prevailing use of extensive propaganda in the community (e.g., through mass media).

18. Reliance of people upon dogmas or absolute ideologies (e.g., religious, philosophical).

19. Lack of family and community respect for and understanding of the values and contributions of reflective thinking.
20. The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, and institutions.

21. The presence of "shunned or closed" areas of inquiry in the school and the community (e.g., sex, communism, race problems).

22. The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family.

23. Inability of students to deal with problems reflectively because of lack of native ability.

24. Inability of students to deal with problems reflectively because of immaturity.

25. Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, overgeneralizations, wrong inferences).

Validation of the Initial List of Obstacles

The above section presented the initial step undertaken for developing the tentative list of obstacles. The means through which this phase was conducted was through an intensive and extensive analysis of the literature. As most of the studies reported were, however, not of the experimental nature, and as almost all of the studies did not attempt to differentiate at least grossly those factors that were serious form the less serious, a further validation was thought necessary.

It was decided, therefore, to submit the initially formulated list of statements to a jury of fifty leaders
in education. The purposes of this phase of the study were therefore clear: (1) to seek the validation of those items already included in the list, (2) to secure suggestions for improving the items in wording or other mechanical improvements, and (3) to solicit important additional obstacles not included in the list.

Selection of the Jury Members

The next important phase was the establishment of criterion to guide the investigator in selecting leaders in education. The following items were considered in developing the criterion:

1. The person should be an outstanding leader in education.

2. The person should be committed to the assumptions that the development of reflective thinking is one of the more important objectives of the secondary school.

3. The person should have contributed to this field through writing teaching or other means.

4. The person should, if possible, be currently involved in some projects concerning the development of reflective thinking.

5. The persons to be selected should be distributed over a wide geographical area of the nation.
6. In addition to the five elements stated above, the person should be recommended by at least two out of three members of the writer's committee.

On the basis of this points, a list of the names of fifty leaders in education was secured. The names of these leaders appear in the appendix.

**Organization of the Questionnaire**

The questionnaire is divided into four sections. The first section deals with the definition of "obstacle" and "reflective thinking." Leaders were instructed to react to each of the items on the basis of their own experience and personal judgment, and in terms of Dewey's definitions of reflective thinking. This section in general gives instructions to the respondents. The second section is made up of the twenty-five items tentatively developed at the beginning. The third section deals with additional obstacles, and the last section with comments.

**Distribution of Questionnaire**

The questionnaire and a personal letter were sent to each leader explaining the major purpose of the study and why he or she was chosen.
Analysis

Thirty-eight of the fifty, or seventy-eight per cent of the questionnaires were returned. Out of these, two were found unusable, and five came too late for inclusion, leaving thirty-one, or sixty-two per cent. The responses represent a wide geographical distribution and approximate the general picture of the fifty leaders originally selected.

The responses were tabulated and the average and simple rank order calculated accordingly, as shown in Tables 1 and 2.

Table 1 presents the reaction of the thirty-one leaders concerning each of the twenty-five obstacles on the basis of the five point scales, interpreted as follows:

1. None or very little
2. Little
3. Some or Average
4. Much
5. Very much

The first column in Table 1 contains the identification of the item corresponding to the questionnaire. The second column shows the total number and per cent of the leaders who responded to the item. And the third column presents the number and per cent of the respondents
Table 1

Reaction of Thirty-One Leaders in Education Dealing with Obstacles to the Development of Reflective Thinking in the Secondary School

<table>
<thead>
<tr>
<th>Check List Identification</th>
<th>Total No. &amp; Per Cent of Respondents</th>
<th>Significance of each Obstacle as Rated by Respondents on the Fine Point Scale.</th>
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Table 1 (contd)

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<th>Check List* Identification</th>
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*See p. for the numbered list of obstacles.
Table 2

The Responses of Thirty-one Leaders in Terms of the Mean Scale Value and Relative Rank Order of Obstacles Based on Total Weighted Scores

<table>
<thead>
<tr>
<th>Check List Identification</th>
<th>Total Number and Per Cent of Respondents</th>
<th>Total Weighted Score &amp; Per Cent Based on the Scale</th>
<th>Mean Scale Value</th>
<th>Relative Rank Order</th>
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concerning each obstacle on the basis of the five point scale mentioned above.

The table should therefore be read as follows. There were thirty-one leaders or 100 per cent that reacted to the first item which deals with the overemphasis by teachers and school authorities on the transmission of the social heritage as a major purpose of education. Of that number 5 or 16.1 per cent considered the item to be of very little or no significance as an obstacle; 5 or 16.1 per cent considered the item to be of little significance; 5 or 16.1 per cent thought it to be of an average obstacle; 10 or 32.3 per cent rated it as having much significance while 6 or 19.4 per cent considered it to be very much of an obstacle. The remaining items are to be interpreted in the same way. Table 1, therefore, presents the extent to which each item was considered to be an obstacle, and the result of its rating on the five point scale.

Table 2 presents the relative rating and standing of each obstacle when compared to each other. The first column presents as before the identification of the obstacles corresponding to the questionnaire. The second column presents the total number and per cent of the leaders reacting to the obstacles. The third column presents the total weighted score and the corresponding
per cent. For example, the first obstacle has the following rating as shown in Table 1: 5 people considered it "very little" of an obstacle, 5 "little," 5 "average," 10 "much" and 6 "very much." Considering the interpretation of the scale, it would have a total weighted score of 100 (i.e., 5x1 + 5x2 + 5x3 + 10x4 + 6x5). The total possible score is 31 x 5 or 155. Therefore a total weighted score of 100 would be 64.5 per cent (i.e., 100 ÷ 155 changed into per cent). The remaining items were computed exactly following the above procedure.

The fourth column contains the mean or average scale value computed by dividing the total weighted score into thirty-one carried to one decimal point. Therefore the mean scale value of the first item would be 100 ÷ 31, or 3.2. The scale shows that 3.2 is above the average. Therefore the item is to be interpreted as: the composite judgment of the leaders in education rate this item as being much above "average" of an obstacle. The remaining items were computed in an identical manner and are to be interpreted in the same way.

The fifth column shows the simple rank order of the items in relation to each other. The rank order was also determined on the basis of the total weighted score. The first item is therefore to be interpreted as ranking
tenth among the twenty-five items, the second item, first, and so on down to the twenty-fifth item which is ranked eighteenth.

In the remaining part of this section each item or obstacle will be discussed separately under three headings. Following the obstacle, the mean scale value and the simple relative rank order will be indicated respectively in brackets. Secondly, the suggestions and reactions, if any, by the leaders will be presented, and thirdly, the final status of the item, if any revision has been undertaken.

1. Overemphasis by teachers and school authorities on the transmission of the social heritage as a major purpose of education (3.2, 10).

Suggestions regarding this item were few. One leader commented: 'The emphasis on the transmission includes the lay public as well, since through boards of education and other organizations they are the policy-making bodies of their school systems.' The item was therefore slightly revised to read: overemphasis by teachers, school administrators and lay public on the social transmission of the social heritage as a major purpose of education.

2. Teachers' lack of understanding of reflective thinking and its role in individual and group behavior (4.5, 1).
This item was judged to be very much of an obstacle and since it was ranked first by the leaders it is to be regarded as among the most serious obstacles facing school people in developing thinking.

Comments

In my opinion, the number one block to teaching reflective thinking is their lack of knowledge of the subject and their inadequate training. Typically, they take no courses in logic and none in semantics, two of the disciplines basic to reflective thinking. Moreover, whereas they know a lot about their major, e.g. chemistry, history, mathematics, they know very little about scientific method, historical method and the like.

"As you can see, the only major obstacle is the lack of teachers' knowledge of reflective thinking."

"Many of our teachers need training in modern psychological conception of the nature of thinking. Many still believe in faculty psychology either explicitly or implicitly."

Since the comments deal exclusively with why this particular item is considered an obstacle by the respondents, the item stands as stated above.

3. Teachers' lack of skill in guiding students in the development of reflective thinking (4.3, 2.5).

This item was rated as being "much" of an obstacle, and ranked 2.5. It is therefore considered a serious obstacle.
"This is indeed a threatening weakness of teachers. It is a major obstacle deserving the attention of in-service education programmes. As yet we have not broken the barrier of developing skill of thinking in our future teachers. And yet we are complacent."

"Needed skill would quickly be developed if teachers really believed in the value of reflective thinking and were encouraged by administrators to place high value on this ability as an outcome of instruction."

The item remains in its original form.

4. Use by teachers of conventional, less time consuming methods of teaching (e.g., recitation, lecture) because of over-loaded schedules (3.8, 4).

This item was judged to be "much" of an obstacle and ranked fourth among the twenty-five items.

"Probably the main obstacle to developing reflective thinking is tradition: tradition in preparation of teachers, tradition in teaching methods, tradition in teaching materials and teaching procedures."

Teachers affirm the objective of critical thinking but have difficulty in overcoming habits of long standing which have almost enslaved them and conditioned their activities. This is indeed a weakness of long acquaintance. May I suggest you add 'large classes, extra-class activities'
as being factors which overload the schedule—such methods would not be used if teachers had a genuine understanding of reflective thinking and its role... (as in 2) and were supported by administrators who had the same understanding.

The item was revised to read: Teachers' use of conventional, less time-consuming methods of teaching (e.g., recitation, lecture) because of over-loaded schedules, large classes or other reasons.

5. Lack of adequate instruments for evaluating progress of students in learning to think reflectively (3, 3, 8).

The item was judged to be above "average" as an obstacle and ranked eighth.

Comment

Many leaders commented that they have found this obstacle very prevalent among teachers with whom they have associated in one way or another, and that the lack of evaluating instruments in reflective thinking has been and is a real block in appraising progress in this area.

In the absence of any comments or suggestions for improvement, the item remains in its original form.

6. Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students (3, 7, 5).
It ranked fifth, and was rated to be "much" of an obstacle. It seems to indicate that the paucity of instructional materials at the different intellectual levels of students is a serious obstacle. The item remains as stated above.

7. The fixed and prescribed nature of the school curriculum (e.g. courses of study outlined in terms of subjects or textbooks to be covered rather than concepts to be developed or problems to be solved (3.6, 6).

This item was rated as being well above "average" as an obstacle and was ranked sixth, thus showing the degree to which it is considered a serious obstacle by leaders in education.

"This undoubtedly has "some" effect, but if one really believes in the value of reflective thinking a great deal can be done toward the achievement of this desirable outcome, even within "the fixed and prescribed nature of the school curriculum."

No change is made in this item.

8. Students' use of faulty language expression or comprehension and/or the lack of adequate vocabulary (2.5, 17).

The item was rated as being of little significance and ranked the seventeenth. Table 2 shows that it has a weighted score of 77, giving it 49.7 per cent. The item remains as stated.
9. Autocratic leadership of boards of education and school administrators (2.4, 19).

It ranked nineteenth and was rated as being less than "average," but more than "little" of an obstacle.

Comments

This obstacle was rated comparatively low. Many thought that it is not the autocratic nature of authorities that impedes reflective thinking, though it has a definite effect, but rather the inconsistency or intellectual dishonesty of administrators who preach one thing and practice another. In the light of such suggestions, many gave an additional obstacle to replace this one. Accordingly, the investigator incorporated the idea of this item in the new suggestions and dropped this from the list. The suggested new item replacing this one will be presented in the section of additional obstacles following this general discussion.

10. Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g., morals, religion, esthetics. 2.7, 13).

This item was judged to be slightly below "average" as an obstacle, and was ranked thirteenth. No suggestions or comments were made. The item remains without change.

*See page 135.
11. Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking in the school program (4.3, 2.5).

This is an important item. Together with the third item discussed above, leaders rated this item as having "much" significance as an obstacle and ranked it the second or the third.

Comments

"Failure of teacher-preparation institutions to produce teachers who think reflectively is a major obstacle in my opinion."

"Still our teacher-training colleges are after integrated curricula, and not after integrated and integrating individuals; they are after the accumulation of credits in various compartmentalized subject areas."

"Teacher-training institutions often, if not most of the time utilize a methodology they are preaching against, thus creating conflicting situations to students. They still put emphasis on facts, and very rarely on thinking."

"Many teacher-training institutions function on the basis of outmoded psychological principles and rigid philosophical tenets."

"This is an important obstacle. But to limit the use of reflective thinking on the part of school people
only to the 'school program' is one source of the difficulty. This limitation is unrealistic and undesirable."

The comments tend to indicate that this obstacle is a very serious one. The last comment was thought by the investigator as being minor but significant. It would seem that institutions would train individuals to think for themselves and by themselves, and this need not be restricted only to the "school program." In the light of this the last phrase "in the school program" was dropped, and the item in its final form reads: Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking.

12. Temporary or chronic physical and mental health conditions of students (1.5, 25).

As shown in Table 1, 18 leaders or 58.0 per cent considered it to be of no obstacle at all; 10 or 32.3 per cent as being "little" as an obstacle, and only 3 or 9.7 per cent as being of an average obstacle, while 0, or 0.0 per cent, 0, or 0.0 per cent considered it to be "much" and "very much" of an obstacle respectively. The general overall rating was 1.5 or less than "little" of an obstacle, and ranked the twenty-fifth or the last item in the whole list.

**Comments**

From a regular teacher's point of view, teaching in a regular high school, this would not seem to be a class issue. If
the student is sick physically, then all that the teacher can do is to send him to the school nurse or school doctor. If the child is mentally sick, then either he usually goes to a special school or is handled by the school's psychologist or psychiatrist. There may be few exceptional cases.

In the light of these reasons and the reaction of the leaders evidenced in their rating, this item is dropped from the list.

13. Students' emotions and feelings (e.g., wishes, desires, fears, self-interest, self-love) (1.9, 22).

This was rated a little higher than the previous one. It was rated as being of little significance as an obstacle and was ranked twenty-second out of twenty-five items.

Comments

Many leaders commented that while the student's emotions may hinder the teacher from helping him grow in this direction, nevertheless it is the teacher's responsibility to accept the student for what he is at any time, and help him overcome his difficulty.

"This situation in fact is a challenge, if and when it exists, to teachers to devise corrective means and preventive procedures to improve the situation."

Leaders further commented that this is often used as an excuse.
"The ingenious teacher will marshall the situation he faces by skillfully guiding the student to realize the dilemma he is in."

This item, although a possible obstacle as explained, was dropped from the checklist on the basis of the above rationale.

14. Students' disturbances and/or mental blocks (2.0, 20.5).

It is considered to be "little" of an obstacle and was ranked together with obstacle 22, twentieth or twenty-first.

Comment

The same comment given to obstacle 13, and the same comments made on such items as 24, 25, and 23 were given. The main burden of the comments is to state that while such disturbances may be obstacles, and are often obstacles, they are more than often used as excuses, "merely talking points" as a leader said, and "merely so much window dressing" as another commented.

The main reason in dropping this item from the list was the feeling of the investigator that "degrees" of seriousness of the nature of the obstacle could not satisfactorily be obtained through the questionnaire. Prolonged interviewing and observation would seem to be
better instruments. Complex psychological processes, as implied in this item, would need other procedures.

15. Teachers' emotions and feelings (e.g., wishes, desires, fears, self-interest, self-love, 2.7, 14).

See comment below.

16. Teachers' disturbances and/or mental blocks (2.7, 15).

These two items were ranked fourteenth and fifteenth by the leaders, and considered to be nearly an "average" obstacle.

Comments

Leaders commented that the existence of these situations could be frustrating to students. One leader wrote: "Teachers being human may at times be victims of such situations, but at no time should schools employ teachers who are known to have these situations habitually."

To many leaders the fact that these two items could be neatly separated into two was highly questionable. In fact the idea of self-interest or self-love or fear may be the cause of creating disturbances or mental blocks. It may also work the other way around. A mentally blocked person may find it impossible to judge situations objectively outside of his ego interest.

In the final analysis these two items are combined to read: Teachers' emotions, feelings, disturbances and/or mental blocks (e.g., wishes, desires, fears, self-interest, self-love, etc.).
17. The prevailing use of extensive propaganda in the community (e.g., through mass media (2.6, 16)).

This was rated as being less than "average" of an obstacle and ranked sixteenth. The item is not changed from its original statement.

18. Reliance of people upon dogmas or absolute ideologies (e.g., religious, philosophical) (3.0, 12).

This situation was considered an "average" obstacle and was ranked twelfth among the twenty-five items of the instrument.

Comment

"Dogmas have always been close enemies of reflective inquiry."

Dogmas and absolute ideologies become blocks to the development of reflective thinking when they are forced down the throats of young people without analysis or doubt raised by the young people. But when dogmas and ideologies are the result of inquiry and investigation, which some are, then their hindering effect is minimized or eliminated.

"It is not merely the existence of dogmas that is a serious threat to inquiry, but rather the systematic indoctrination of these dogmas when the mind of the young is supple and flexible." The comments reinforce the hypothesis that this is a serious obstacle. The item is left to stand in its original form.

19. Lack of family and community respect for, and understanding of, the values and contributions of reflective thinking (3.5, 7).
This situation is judged to be of less than "much" but much more than of an "average" obstacle. It was ranked seventh.

Comments

I am not at all sure that there are "separate" obstacles. The school as a social institution, has and had a long history of devotion to idea, to value clarification, to thinking, and in this respect, it mirrors the total culture. The difficulties are undoubtedly plural, but they are probably related to one another very closely and suggest a social complex in which the family plays a role.

My own feeling is that the major obstacles to the development of reflective thinking in the high schools (secondary schools) are as follows: (1) the absence until recently of any strong concern in the culture favorable to the development of reflective thinking. As many commentators have observed, there has been an emphasis on the development of capacity to adjust to life rather than think too seriously about it; (2) there is so much lack of understanding by the community at large that it is difficult to expect respect and support from the parents, lay and public leaders, etc. who constitute the community.

The above comments substantiate the fact that such an item is indeed a very serious obstacle, that deserves careful scrutiny.

Other leaders commented suggesting the dropping of the phrase "respect for" from the statement. The following are typical of the suggestions;
It is not well to have 'respect' and 'understanding' both in this statement. One cannot have either 'lack of respect' or 'respect' for something which he does not understand. 'Lack of understanding' is, in my judgment, responsible for some of the difficulty with respect to the development of reflective thinking. In fact, I believe it is responsible for a lot of it, but I could not say the same for 'lack of respect' which assumes understanding.

One does not respect, in a genuine sense, that which he does not understand. If he does, it is a rather blind one--acceptance without an adequate knowledge of its full implications. I would therefore suggest to leave out the phrase 'respect for' from the proposition.

In view of the fact that 'respect' in general, ideally, always should follow as a result of one's understanding and appreciation of the thing concerned; the suggestion of the leaders was accepted by the investigator and incorporated in the final statement, making it read: Lack of family and community understanding of the values and contributions of reflective thinking.

20. The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas and institutions (3.3, 9).

This item was ranked ninth and judged to be of much over "average" of an obstacle. There were no comments and the item is left as stated above.

21. The presence of "shunned or closed" areas of inquiry in the school and the community (e.g., sex, communism, race problems)(3.2, 11)
Just like the previous item, this too was judged to be a serious obstacle. It was rated much above "average" and ranked eleventh.

Comment

The only comment was:

The presence of 'closed areas' is not a sufficient condition to block the teaching of the reflective method of inquiry. Many open but unresolved areas are nearly always available. The 'closed areas' argument is often used as an excuse for inaction. This does not mean, of course, that the presence of such condition is not an obstacle to reflective thinking. In many cases such a condition is an acute and sharp factor hindering teachers and school people from developing reflective thinking.

The item remains as stated originally.

22. The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family (2.0, 20.5)

It was ranked 20.5 (twentyeth or twenty-first) and rated to be of 'little' significance as an obstacle.

Comment

No comments were made. The investigator feels that the provision and the enrichment of meaningful experiences to students is an important function of the school. No meaningful experience is possible without an element of thought. Indeed it was shown in the second chapter that previous experiences both hinder or facilitate thinking. Studies after studies have shown that the family socio-economic status in many cases correlates with achievement,
intelligence quotient and even motivation. Therefore it was decided to leave this item in the instrument and see how school people actually facing students react to it.

23. Inability of students to deal with problems reflectively because of lack of native ability (1.8, 23).

24. Inability of students to deal with problems reflectively because of immaturity (1.7, 24).

Both of these items were ranked twenty-third and twenty-fourth respectively and rated as less than of 'little' significance as obstacles. Therefore leaders thought that these two items were not at all serious obstacles of concern to schools 'as such.'

Comment

Some of the comments made above dealing with some of the items that were dropped, apply also to this one. The investigator feels that the existence of 'immaturity' and of lack of 'native ability' are essentially the reasons why schools should be teaching. These situations become therefore reasons, bases why the schools should strive to improve the situation. Teachers often affirm that it is their responsibility to guide students from what they are to what they are capable of becoming. And this situation of 'immaturity' or 'native ability' are concrete illustrations that many and varied problems could be discussed within the maturity level of students.
Furthermore the ideas that these are 'merely excuses rather than obstacles' or that these are 'merely so much window dressing,' as commented elsewhere apply here, too. Therefore both of these items are dropped from the list of obstacles.

25. Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, overgeneralizations, wrong inferences) (2.3, 18).

This was the last item of the questionnaire. It was rated to be little significance as an obstacle, and ranked the eighteenth.

Comments

This is the reason why we emphasize teaching reflective thinking, and not an obstacle. I've marked 22-25 low because they are talking points and excuses rather than real reasons for not emphasizing values of reflective thinking more than we ordinarily do in school curricula. After all, these actually underline the need for a required content of educational experiences designed to educate students in ability to reflect on their beliefs and experiences, not real reasons why such experiences should not be employed. It is as if we said 'no physical education because students are now not able to prepare well physically.'

As the comments indicate, the inability of students to think logically is the very reason why schools need to concentrate their attention on this ability. But the lack of instructional provision to remedy the situation, the 'plain inertia' of schools as one leader phrased it, is the major obstacle.
Therefore the item is rephrased to read: Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, overgeneralizations, wrong inferences), and the lack of instructional provision to improve the situation.

Summary

On the bases of the reactions of the thirty-one leaders in education to each of the twenty-five obstacles and the item by item discussion, the following three results were achieved. First, the determination of the rank-order of the obstacles thus indicating the extent to which each item is an obstacle. The following is a list of the statements in rank order:

1. Teacher's lack of understanding of reflective thinking and its role in individual and group behavior.

2.5 Teachers' lack of skill in guiding students in the development of reflective thinking.

2.5 Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking in the school program.

4. Use by teachers of conventional, less time-consuming methods of teaching (e.g., recitation, lecture) because of over-loaded schedules.
5. Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students.

6. The fixed and prescribed nature of the school curriculum, (e.g., courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved).

7. Lack of family and community respect for and understanding of the values and contributions of reflective thinking.

8. Lack of adequate instruments for evaluating progress of students in learning to think reflectively.

9. The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas, and institutions.

10. Overemphasis by teachers and school authorities on the transmission of the social heritage as a major purpose of education.

11. The presence of "shunned or closed" areas of inquiry in the school and the community (e.g., sex, communism, race problems).

12. Reliance of people upon dogmas or absolute ideologies (e.g., religious philosophical).
13. Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g., morals, religion, esthetics).

14. Teachers' emotions and feelings (e.g., wishes, desires, fears, self-interest, self-love).

15. Teachers' disturbances and/or mental blocks.

16. The prevailing use of extensive propaganda in the community (e.g., through mass media, pressure groups).

17. Students' use of faulty language expression or comprehension, and/or the lack of adequate vocabulary.

18. Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, overgeneralizations, wrong inferences).

19. Autocratic leadership of boards of education and school administrators.

20.5 Students' disturbances and/or mental blocks.

20.5 The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family.

22. Students' emotions and feelings (e.g., wishes, desires, fears, self-interest, self-love).

23. Inability of students to deal with problems reflectively because of lack of native ability.
24. Inability of students to deal with problems reflectively because of immaturity.

25. Temporary or chronic physical and mental health conditions of students.

Second, out of these obstacles, items number 9, 12, 13, 15, 23 and 24 ranked nineteenth, twenty-fifty, twenty-second, and twenty and a half, twenty-third and twenty-fourth respectively were dropped from the list for reasons explained in their respective places. Items number 14 and 16 were combined to form one obstacle. And the remaining items were either left as originally stated or revised in the light of the suggestions of the respondents and the investigator's judgment.

Third, the eighteen items that emerged as a result of the revision are as follows:

1. Teachers' lack of understanding of reflective thinking and its role in individual and group behavior.

2. Teachers; lack of skill in guiding students in the development of reflective thinking.

3. Teachers' use of conventional, less time-consuming methods of teaching (e.g., recitation, lecture) because of overloaded schedules, large classes or other reasons.

4. Teachers' emotions, feelings, disturbances and/or mental blocks (e.g., wishes, desires, fears, self-interest, self-love, etc.).
5. Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g., morals, religion, aesthetics).

6. Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking.

7. Overemphasis by teachers, school administrators and lay public on the transmission of the social heritage as a major purpose of education.

8. The fixed and prescribed nature of the school curriculum (e.g., courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved).

9. Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students.

10. Lack of adequate instruments for evaluating progress of students in learning to think reflectively.

11. The presence of "shunned or closed" areas of inquiry in the school and community (e.g., sex, communism, race problems).

12. Lack of family and community understanding of the values and contributions of reflective thinking.
13. The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas and institutions.

14. Reliance of people upon dogmas or absolute ideologies (i.e., philosophical, religious).

15. The prevailing use of extensive propaganda in the community (e.g., through mass media).

16. Students' use of faulty language expression or comprehension and/or the lack of adequate vocabulary.

17. Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, over-generalizations, wrong inferences), and the lack of instructional provision to improve the situation.

18. The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family.

Additional Obstacles Suggested by Leaders

Thirteen respondents, or forty-two per cent of the total respondents, suggested one or more additional obstacles.

It was assumed that the remaining leaders found the list to which they reacted to be comprehensive and to
include the major areas of the obstacles in the field. That this assumption seems to be justifiable is seen when we consider some of the remarks given by those respondents who rated the items but did not give additional ones. "You have a pretty comprehensive list," "Well thought out and formulated list of obstacles covering the field," "In my opinion, the items expressed in your questionnaire cover the field very well," "It appears to me that the main obstacles are covered by your questionnaire." Therefore, it was assumed that the items included in the list together with the additional one would represent a fairly comprehensive list of obstacles to the development of reflective thinking.

A preliminary investigation of the additional obstacles suggested the undertaking of three steps: namely, (1) the elimination of those items whose meaning was vague as stated by the respondents, (2) the elimination of those items which were either identical or similar to the items already included in the checklist, and (3) the classification, formulation and minor improvement of those items which do not fall under either of the two above categories, without changing the meaning intended by the original contributors. A verbatim illustration shows the items that fall under the first step. "How to work with students on strengths and weaknesses in thinking," "How to work with problems in which thinking, values and
valuing are all involved," "Family preferences for mediocre entertainment."

There were also many suggestions which duplicated the items already included as the following verbatim statements indicate.

How to organize the curriculum in a manner that requires thinking.

Absence of emphasis on reflective thinking in the curriculum.

How to "grade" thinking (many teachers say this is an obstacle).

Drive of reactionary educators and laymen for emphasis on fundamentals which diverts attention from the kind of teaching that permits thinking.

Tendency to measure school success in terms of immediate pay-off values for students, e.g. job proficiency on college entrance rather than in terms of more educational values.

Rewards in school go almost exclusively to those who have memorized and have verbal facility.

The absence until recently of any strong concern in the culture favorable to the development of reflective thinking.

Lack of good example on the part of the adult members of the community.

Impatience on part of students and teachers on time involved in reflective thinking.

Lack of training, often of interest, in teachers when it comes to inculcation of habits leading toward reflective thinking.
Failure of somebody to teach teachers to do reflective thinking or to want to do reflective thinking.

These suggestions are each thought to be incorporated in one or the other of the items included in the checklist. And when the rating of these items was compared with the rating of their counterpart in the original list of obstacles a high degree of relationship was observed. This thus indirectly throws light on the consistency and reliability of the leaders' reactions.

In connection with the third step, the following items were suggested.

Lack of control of subject matter by teachers.

Pressure of colleges for conformity to prescribed matriculation requirements which ignore reflective thinking.

The intellectual dishonesty of school administrators who pay verbal allegiance only to the value of reflective thinking in the school curriculum.

Lack of basic research on the nature of problem-solving operations at various developmental levels.

The tendency, in theory, to rule out the "aesthetic component" or the feeling aspect of problem-solving process.

Lack of conviction on part of teachers that reflective thinking is valuable.

Anxiety on part of family and community and teachers which leads to quest of certainty rather than an attitude of open inquiry toward problems of deep concern to them.
These suggestions were closely studied for simpler ways of stating them, clarification of meaning by adding an example, shortening of long and involved expressions. As a result the following formylations were made:

Teachers' lack of competency in the subject matter of instruction.

Continued pressure of colleges for conformity to prescribed entrance requirements.

Intellectual dishonesty of school administrators who pay only verbal allegiance to the values of reflective thinking in the school program.

Lack of basic research on the nature of problem-solving operations at various developmental levels.

The presence of faulty theorizing about problem-solving processes (e.g., tendency to rule out the "aesthetic component" or feeling aspect of problem-solving processes.)

Teachers' lack of conviction in the values of reflective thinking.

Anxiety on part of community, family and teachers which leads individuals to seek for final solutions of problems of deep concern to them, rather than an attitude of open inquiry.

How were these obstacles rated on the basis of the scale provided? Each of the respondents who suggested additional obstacle or obstacles also rated his suggestion on the basis of the five point-scale as shown in Table 3.

The table shows that while an item was suggested by as few as two people or 15.4 per cent of the total respondents, there was another item suggested by as many
<table>
<thead>
<tr>
<th>Obstacles</th>
<th>Total No. &amp; %</th>
<th>The number of respondents about the significance of each obstacle on the basis of the following scale.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Teachers' lack of competency in the subject matter of instruction</td>
<td>4</td>
<td>30.8</td>
</tr>
<tr>
<td>Continued pressure of colleges for conformity to prescribed entrance requirements</td>
<td>3</td>
<td>23.1</td>
</tr>
<tr>
<td>Intellectual dishonesty of school administrators who pay only verbal allegiance to the value of reflective thinking in the school program</td>
<td>5</td>
<td>38.5</td>
</tr>
<tr>
<td>Lack of basic research on the nature of problem-solving operations at various developmental levels</td>
<td>2</td>
<td>15.4</td>
</tr>
</tbody>
</table>
Table 3 (contd)

Reaction of Thirteen Leaders Dealing with Additional Obstacles

<table>
<thead>
<tr>
<th>Obstacles</th>
<th>Total No. &amp; % of Respondents</th>
<th>The number of respondents about the significance of each obstacle on the basis of the following scale.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>The presence of faulty theorizing about the problem-solving process, e.g.</td>
<td>2</td>
<td>15.4</td>
</tr>
<tr>
<td>Teachers' lack of conviction in the values of reflective thinking</td>
<td>8</td>
<td>61.6</td>
</tr>
<tr>
<td>Anxiety on part of community, family &amp; teachers which leads individual to seek for final solutions of problems of deep concern to them, rather than an attitude of open inquiry</td>
<td>9</td>
<td>69.2</td>
</tr>
</tbody>
</table>
as nine people, or 69.2 per cent. In no case, except the first item, were these items rated as being "very little" or "little" or of "average" significance as an obstacle.

The majority of the items were rated by the respondents as being "much" or "very much" of obstacles.

Therefore these seven additional obstacles together with the revised eighteen items from the previous questionnaire, make up the content of the checklist to be sent to forward-looking teachers.

After validating the items on the original checklist and considering the additional items suggested by the respondents, the final checklist to be sent to selected teachers was formulated. This list follows:

1. Teachers' lack of understanding of reflective thinking and its role in individual and group behavior.
2. Teachers' lack of skill in guiding students in the development of reflective thinking.
3. Teachers' lack of competency in the subject matter of instruction.
4. Teachers' lack of conviction in the values of reflective thinking.
5. Teachers' use of conventional, less-time consuming methods of teaching (e.g., recitation, lecture) because of overloaded schedules, large classes or other reasons.
6. Teachers' emotions, feelings, disturbances and/or mental blocks (e.g., wishes, desires, fears, self-interest, self-love, etc.).

7. Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g., morals, religion, aesthetics).

8. Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking.

9. Continued pressure of colleges for conformity to prescribed entrance requirements.

10. Lack of basic research on the nature of problem-solving operations at various developmental levels.

11. The presence of faulty theorizing about problem-solving processes, (e.g., tendency to rule out the "aesthetic component" or feeling aspect of problem-solving processes).

12. Overemphasis by teachers, school administrators and lay public on the transmission of the social heritage as a major purpose of education.

13. Intellectual dishonesty of school administrators who pay only verbal allegiance to the values of reflective thinking in the school program.
14. The fixed and prescribed nature of the school curriculum (e.g., courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved).

15. Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students.

16. Lack of adequate instruments for evaluating progress of students in learning to think reflectively.

17. The presence of "shunned or closed" areas of inquiry in the school and the community (e.g., sex, communism, race problems).

18. Lack of family and community understanding of the values and contributions of reflective thinking.

19. The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas and institutions.

20. Reliance of people upon dogmas or absolute ideologies (e.g., philosophical, religious).

21. The prevailing use of extensive propaganda in the community (e.g., through mass media).

22. Anxiety on part of community, family and teachers which leads individuals to seek for final solutions of problems of deep concern to them, rather than an attitude of open inquiry.
23. Students' use of faulty language expression or comprehension and/or the lack of adequate vocabulary.

24. Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, over-generalizations, wrong inferences) and the lack of instructional provision to improve the situation.

25. The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family.
CHAPTER V
THE JUDGMENT OF A SELECTED GROUP OF TEACHERS
CONCERNING THE SIGNIFICANCE OF THE
REVISED LIST OF OBSTACLES

Introduction
The list of the revised and validated obstacles as reported at the end of Chapter IV, constitute the content of the questionnaire that was sent to a selected group of teachers. The analysis of the responses of these questionnaire by a selected group of teachers is presented in this chapter.

Purpose of Questionnaire
This questionnaire aimed (1) to validate further the obstacles judged by leaders in actual classroom situations, and (2) to determine the extent to which teachers rate the items as obstacles on the basis of their teaching experiences.

Selection of Respondents
The writer decided to send the questionnaire to forward-looking secondary schools and to outstanding teachers in secondary schools. The problems then faced were (1) the selection of outstanding or forward-looking
secondary schools and (2) the selection of outstanding teachers who would cooperate.

With regard to the first, it was thought best to secure the recommendations of educators. Therefore, two professors from the writer's committee and two additional members of the Ohio State University faculty known to have wide contacts with secondary schools in curriculum improvement projects, were approached separately. On the basis of personal experience, each person recommended schools which he knew have undertaken, or are undertaking, projects of one sort or another dealing with the improvement of reflective thinking. Each of the schools included in the list was recommended by at least three of four professors. The list of the schools was further examined with regard to contribution made by these schools as noted in the literature. It was also thought wise to include some schools known to have an outstanding teacher or teachers. In the light of these suggestions, seventy schools that met the requirements were selected. The large number of schools was also secured anticipating that many of them may be busy with school work, as the study was to be conducted at the end of the school year.

With regard to the selection of outstanding teachers, the following procedure was undertaken. Because of the
difficulty involved in securing names and addresses of individual teachers, it was decided to contact the principal of each school. Accordingly a personal letter to the principal of each school was written explaining the nature of the project reasons why his school was chosen and requesting whether his school would be interested and therefore willing to co-operate in the study. To acquaint the principal with the task involved in filling the questionnaire a copy was sent with the letter. The principal was also requested to secure a list of teachers among his staff whom he felt were doing outstanding work in developing reflective thinking. He was further asked whether he would be willing to take the responsibility of distributing the questionnaires to his selected staff members and collecting and forwarding them to the writer. With this plan, each of the seventy schools was contacted.

The responses of the principals reveal that fifty out of seventy replied, and twenty out of the fifty showed a definite interest and willingness to co-operate in filling out the questionnaire. Out of the twenty replies six came too late to be used. Other schools in the vicinity that met the requirements were contacted by the investigator, in order to increase the number of participating schools. Seventeen schools from six different
states agreed to co-operate. Table 4 shows the number of the states, number of school systems, and number of questionnaires requested and returned. A total of seventeen different school systems in six different states co-operated. A total of one hundred teachers and administrators out of 168, or 60 per cent, returned the questionnaire completed. However, seven questionnaires were found to be unusable, thus reducing the number of the usable questionnaire to ninety-three. Table 5 shows the nature and number of the respondents classified in terms of their positions. As shown in the table, English teachers head the list followed by social studies, mathematics and science teachers, music, industrial arts, art, and business teachers are at the bottom of the list. While principals selected teachers of music, arts, business, etc. as outstanding with regard to their contribution to the development of reflective thinking, well above two-thirds of the teachers selected were in the fields of English, social studies, mathematics and science. Among the respondents there were also five people who had both administrative and teaching duties.
Table 4

Number of States, School Systems, Questionnaires Requested and Returned

<table>
<thead>
<tr>
<th>States</th>
<th>School System</th>
<th>Questionnaire Requested</th>
<th>Questionnaire Returned</th>
<th>Per Cent of Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
<td>22</td>
<td>18</td>
<td>82</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>20</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>30</td>
<td>13</td>
<td>43</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>20</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>F</td>
<td>10</td>
<td>71</td>
<td>44</td>
<td>62</td>
</tr>
</tbody>
</table>

Total 6 17 168 100 59.5

Organization of the Questionnaire

The questionnaire includes three sections. The first section sets forth the definition of terms and the general direction to be followed by the respondents. The second section deals with the twenty-five items—each divided into two phases. The first phase deals with the rating of the items on the basis of the five point rating scale provided. The second phase requests teachers to list and briefly describe in the provided space illustrations of practices that they have successfully used to overcome each of the obstacles. The third section
Table 5
Kinds and Number of Teacher Respondents

<table>
<thead>
<tr>
<th>Kind of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Teachers</td>
<td>22</td>
</tr>
<tr>
<td>Social Studies Teachers</td>
<td>21</td>
</tr>
<tr>
<td>Mathematics Teachers</td>
<td>16</td>
</tr>
<tr>
<td>Science Teachers</td>
<td>13</td>
</tr>
<tr>
<td>Core Teachers</td>
<td>6</td>
</tr>
<tr>
<td>Principals</td>
<td>6</td>
</tr>
<tr>
<td>Language Teachers</td>
<td>5</td>
</tr>
<tr>
<td>Department Head, Administrative Assistants</td>
<td>5</td>
</tr>
<tr>
<td>and Counselors</td>
<td></td>
</tr>
<tr>
<td>Art Teachers</td>
<td>2</td>
</tr>
<tr>
<td>Business Education Teachers</td>
<td>1</td>
</tr>
<tr>
<td>Industrial Arts Teachers</td>
<td>1</td>
</tr>
<tr>
<td>Music Teachers</td>
<td>1</td>
</tr>
<tr>
<td>Unidentified</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>*<em>105</em></td>
</tr>
</tbody>
</table>

*Total exceeds 93 due to the fact that some teachers teach more than one subject.

requests teachers to list and briefly describe methods, materials, procedures, etc. they generally use in teaching to develop reflective thinking. They were also asked to include any material, samples of questions, used, and the like, which they feel might be of interest.

Distribution of Questionnaire

On the basis of the requests made by the principals of each school, the questionnaires, together with a personal letter and a self-addressed and stamped envelope were then sent to each school.
Analysis and Interpretation of Data

The responses were tabulated and presented in Tables 6 and 7.

Table 6 shows the reaction of the ninety-three teachers and administrators concerning each of the obstacles on the basis of the five point rating scale just as in Table 1. The first column and the third column are similar to that of Table 1, while column two sets forth the number of respondents to be ninety-three instead of thirty-one. The table is to be interpreted in like manner. Therefore, the first item was judged by ninety-three people or 100 per cent. And among these ninety-three respondents, 6 or 6.5 per cent rated it as being "very little or no" obstacle, 15 or 16.1 per cent as being "little" of an obstacle, 17 or 18.3 per cent as "much" of an obstacle and 19 or 20.4 as being "very much" of an obstacle. Likewise, items two to twenty-five are to be interpreted in the same way. This table thus sets forth in detail the extent to which teachers, on the basis of their experience, judged each of the items to be an obstacle.

Table 7, like Table 2, presents the mean or average scale value and the simple relative rank order calculated on the basis of the total weighted score as explained for Table 2.
Table 6

Reaction of Ninety-Three Teachers Concerning Obstacles to the Development of Reflective Thinking in the Secondary School

<table>
<thead>
<tr>
<th>Obstacle Identification</th>
<th>Total No. &amp; % of Respondents</th>
<th>Significance of each Obstacle on the Basis of the Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no.</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
<td>93</td>
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<tr>
<td>7</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>93</td>
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</tr>
<tr>
<td>9</td>
<td>93</td>
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<tr>
<td>10</td>
<td>93</td>
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</tr>
<tr>
<td>11</td>
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<tr>
<td>12</td>
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<td>14</td>
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<td>15</td>
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<td>18</td>
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<td>19</td>
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<td>20</td>
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<td>21</td>
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<td>23</td>
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<tr>
<td>24</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>25</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>Obstacle</td>
<td>Total No. &amp; % of Respondents</td>
<td>Total Weighted Score &amp; % Based on the Scale</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Total No.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>93</td>
<td>307</td>
</tr>
<tr>
<td>2</td>
<td>93</td>
<td>325</td>
</tr>
<tr>
<td>3</td>
<td>93</td>
<td>267</td>
</tr>
<tr>
<td>4</td>
<td>93</td>
<td>261</td>
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<tr>
<td>5</td>
<td>93</td>
<td>344</td>
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<tr>
<td>6</td>
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<td>11</td>
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<td>14</td>
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<td>15</td>
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<td>16</td>
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<td>17</td>
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<td>19</td>
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<td>328</td>
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<td>20</td>
<td>93</td>
<td>310</td>
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<tr>
<td>21</td>
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<td>250</td>
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<td>22</td>
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<td>23</td>
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<tr>
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<td>93</td>
<td>364</td>
</tr>
<tr>
<td>25</td>
<td>93</td>
<td>265</td>
</tr>
</tbody>
</table>
The first item, for instance, ranked twelfth and it is considered to be much above "average" as an obstacle. The second item is ranked eighth, and has a mean scale value of 3.5, i.e., well above "average," but less than "much" of an obstacle. Item twenty-five is ranked 17.5 and is considered to be nearly average as an obstacle. This table, similar to Table 2, presents the composite judgment of the ninety-three leaders above the twenty-five obstacles compared to one another.

In the light of the rating of the teachers, the following is a list of the twenty-five obstacles in simple rank order. Following each item, its mean scale value is included in parentheses.

1. Lack of adequate instruments for evaluating progress of students in learning to think reflectively. (4.2)

2. Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, over-generalizations, wrong references), and the lack of instructional provision to improve the situation. (3.9)

3. Students' use of faulty language expression or comprehension and/or the lack of adequate vocabulary. (3.8)
4. Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking. (3.7)

5. Teachers' use of conventional, less time-consuming methods of teaching (e.g., recitation, lecture) because of overloaded schedules, large classes or other reasons. (3.7)

6. Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students. (3.6)

7. The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas and institutions. (3.5)

8. Teachers' lack of skill in guiding students in the development of reflective thinking. (3.5)

9. Lack of family and community understanding of the values and contributions of reflective thinking. (3.4)

10. The fixed and prescribed nature of the school curriculum (e.g., courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved). (3.4)

11. Reliance of people upon dogmas or absolute ideologies (e.g., philosophical, religious). (3.3)
12. Teachers' lack of understanding of reflective thinking and its role in individual and group behavior. (3.3)

13. Lack of basic research on the nature of problem-solving operations at various developmental levels. (3.2)

14. Anxiety on part of community, family, and teachers which leads individuals to seek for final solutions of problems of deep concern to them, rather than an attitude of open inquiry. (3.1)

15. The presence of "shunned or closed" areas of inquiry in the school and the community (e.g., sex, communism, race problems). (2.9)

16. Teachers' lack of competency in the subject matter of instruction. (2.9)

17.5 Intellectual dishonesty of school administrators who pay only verbal allegiance to the values of reflective thinking in the school program. (2.8)

17.5 The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family. (2.8, 17.5)

19. Teachers' lack of conviction in the values of reflective thinking. (2.8)

20. The presence of faulty theorizing about problem-solving processes (e.g., tendency to rule out the "aesthetic
component" or feeling aspect of problem-solving processes). (2.7)

21. The prevailing use of extensive propaganda in the community (e.g., through mass media). (2.7)

22. Teachers' emotions, feelings, disturbances and/or mental blocks (e.g., wishes, desires, fears, self-interest, self-love, etc.). (2.5)

23.5 Continued pressure of colleges for conformity to prescribed entrance requirements. (2.5)

23.5 Overemphasis by teachers, school administrators and lay public on the transmission of the social heritage as a major purpose of education. (2.5)

25. Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g., morals, religion, aesthetics). (2.3)

It is difficult to make a statistical comparison of the rating of the obstacles by leaders in education and the rating by teachers for a variety of reasons. The number of teachers is exactly three times the number of the leaders in education and therefore, if any comparison is wanted, these numbers need to be transferred to common numerical points. This could be done but was thought not feasible, as the study is not of a statistical nature.
Table 8

Comparison of Mean Scale Value and Relative Rank Order of the Obstacles as Responded by Thirty-One Leaders and Ninety-Three Teachers

<table>
<thead>
<tr>
<th>Description of Obstacles</th>
<th>Mean Scale Value</th>
<th>Relative Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers' lack of under-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>standing of reflective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>thinking and its role in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>individual and group</td>
<td>3.2</td>
<td>3.3</td>
</tr>
<tr>
<td>behavior.</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Teachers' lack of skill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in guiding students in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>the development of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>reflective thinking.</td>
<td>4.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Failure of teacher-educ-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cation institutions to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prepare teachers and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>administrators who know</td>
<td></td>
<td></td>
</tr>
<tr>
<td>how to utilize</td>
<td></td>
<td></td>
</tr>
<tr>
<td>reflective thinking.</td>
<td>4.3</td>
<td>3.7</td>
</tr>
<tr>
<td>Lack of adequate instru-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ments for evaluating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>progress of students in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>learning to think</td>
<td></td>
<td></td>
</tr>
<tr>
<td>reflectively.</td>
<td>3.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Inability of students to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>detect erroneous conclu-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sions which are the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>results of logical fallacies in reasoning (e.g. false analogy, over-generalizations, wrong inferences), and the lack of instructional provision to improve the situation.</td>
<td>2.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Description of Obstacles</td>
<td>Mean Scale Value</td>
<td>Relative Rank Order</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
<td>------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Students' use of faulty language expression or comprehension and/or the lack of adequate vocabulary.</td>
<td>2.5</td>
<td>3.8</td>
</tr>
<tr>
<td>Teachers' use of conventional, less time-consuming methods of teaching (e.g. recitation, lecture) because of overloaded schedules, large classes or other reasons.</td>
<td>3.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students.</td>
<td>3.7</td>
<td>3.6</td>
</tr>
<tr>
<td>The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds ideas and institutions.</td>
<td>3.3</td>
<td>3.5</td>
</tr>
<tr>
<td>Lack of family and community understanding of the values and contributions of reflective thinking.</td>
<td>3.5</td>
<td>3.4</td>
</tr>
<tr>
<td>The fixed and prescribed nature of the school curriculum (e.g. courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved).</td>
<td>3.6</td>
<td>3.4</td>
</tr>
</tbody>
</table>
Table 8 (contd)

<table>
<thead>
<tr>
<th>Description of Obstacles</th>
<th>Mean Scale Value</th>
<th>Relative Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliance of people upon dogmas or absolute ideologies (e.g. philosophical, religious)</td>
<td>3.0</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 11</td>
</tr>
<tr>
<td>Lack of basic research on the nature of problem-solving operations at various development levels</td>
<td>3.2 ***</td>
<td>13</td>
</tr>
<tr>
<td>Anxity on part of community, family, and teachers which leads individuals to seek for final solutions of problems of deep concern to them, rather than an attitude of open inquiry.</td>
<td>3.1 ***</td>
<td>14</td>
</tr>
<tr>
<td>The presence of &quot;shunned or closed&quot; areas of inquiry in the school and the community (e.g. sex, communism, race problems).</td>
<td>3.2 2.9</td>
<td>11 15</td>
</tr>
<tr>
<td>Teachers' lack of competency in the subject matter of instruction.</td>
<td>2.9 ***</td>
<td>16</td>
</tr>
<tr>
<td>Intellectual dishonesty of school administrators who pay only verbal allegiance to the values of reflective thinking in the school program.</td>
<td>2.8 ***</td>
<td>17.5</td>
</tr>
<tr>
<td>The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family.</td>
<td>2.0 2.8</td>
<td>20.5 17.5</td>
</tr>
</tbody>
</table>

***The items having this identification mark were suggested by the leaders as additional obstacles and could not therefore be rated by all of the leaders who rated the original list of eighteen obstacles.
Table 8 (contd)

<table>
<thead>
<tr>
<th>Description of Obstacles</th>
<th>Mean Scale Value leaders</th>
<th>Relative Rank Order leaders teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers' lack of conviction in the values of reflective thinking.</td>
<td>*** 2.8</td>
<td>*** 19</td>
</tr>
<tr>
<td>The presence of faulty theorizing about problem-solving processes (e.g. tendency to rule out the &quot;aesthetic component&quot; or feeling aspect of problem-solving processes).</td>
<td>*** 2.7</td>
<td>*** 20</td>
</tr>
<tr>
<td>The prevailing use of extensive propaganda in the community (e.g. through mass media).</td>
<td>2.6 2.7</td>
<td>16 21</td>
</tr>
<tr>
<td>Teachers' emotions, feelings, disturbances and/or mental blocks (e.g. wishes, desires, fears, self-interest, self-love, etc.).</td>
<td>2.7 2.5</td>
<td>14 22</td>
</tr>
<tr>
<td>Continued pressure of colleges for conformity to prescribed entrance requirements.</td>
<td>*** 2.5</td>
<td>*** 23.5</td>
</tr>
<tr>
<td>Over-emphasis by teachers, school administrators and lay public on the transmission of the social heritage as a major purpose of education.</td>
<td>3.2 2.5</td>
<td>10 23.5</td>
</tr>
<tr>
<td>Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g. morals, religion, aesthetics).</td>
<td>2.7 2.3</td>
<td>13 25</td>
</tr>
</tbody>
</table>
Secondly, the seven additional items were rated by different numbers as they were suggested only by thirteen or less. We have available, therefore, only the rating of the teachers on these additional items, while we have available two ratings on the other eighteen items. Some observations may be made from Table 8. While the last mean scale value of the leaders is "2.0", it is "2.3" for the teachers. Likewise, while the highest mean scale value for the leaders is "4.5", it is "4.2" for the teachers.

There were certain discrepancies or differences of judgment between leaders and teachers. The second item dealing with teachers' lack of skill in guiding students in the development of reflective thinking was, for instance, ranked "1" by leaders and "8" by teachers, interestingly, for item four, which deals with the lack of adequate instruments for evaluating progress of students in learning to think reflectively, the rating by leaders was "8" and "1" by teachers. Leaders ranked "inability of students to detect erroneous conclusions which are the result of logical fallacies," eighteenth, while the teachers ranked it second. Similarly, the item dealing with language was ranked seventeenth by leaders, but third by teachers. The items dealing with teachers'
emotions was ranked fourteenth by leaders but twenty-second by teachers. The item dealing with the "Disagreement among educators on the applicability of reflective thinking to certain problems of living," was ranked thirteenth by leaders, but at the bottom by teachers.

There is, on the other hand, a rather close agreement on certain items. Such items as "teachers lack of understanding of reflective thinking and its role in individual and group behavior," "Teachers' use of conventional, less time-consuming methods of teaching because of over-loaded schedules, large classes or other reasons," "Lack of adequate instructional materials...," "Reliance of people upon dogmas or absolute ideologies," and others, are judged in a rather close agreement between the leaders and the teachers.

With regard to the seven additional obstacles, four of them were rated high by teachers while three of them were rated rather low. The item dealing with college pressure was the lowest of the seven having an average scale value of 2.5 and ranking 23.5. It is interesting to note that obstacles dealing with the failure of teacher-training institutions, lack of teachers' understanding of reflective thinking, lack of teachers' skill, curricular situations, lack of community understanding
of reflective thinking, lack of adequate instructional materials and evaluative instruments, were rated as being serious obstacles both by leaders and teachers.

This situation seems to have interesting implications to those who are in charge with the preparation of teachers, in-service education programs, and the improvement of the quality of education in the American secondary schools.

This chapter concludes the discussion of the major obstacles to the development of reflective thinking. The next chapter will begin the discussion of the practices used by teachers in overcoming these obstacles.
CHAPTER VI
A SURVEY OF GENERAL PROCEDURES FOR DEVELOPING REFLECTIVE THINKING

Introduction

Chapters III-V presented the procedures used to locate the major obstacles to the development of reflective thinking in the secondary school as viewed by leaders in education and selected teachers. The present chapter, presents a survey of responses made by teachers to the query as to what procedures they used and an interpretation of the literature bearing on the same problem.

Sources of Data

The data of this survey were collected from two sources: the literature in the field and the questionnaire responses of selected teachers. The literature that deals with this phase is rather extensive; it is not within the scope of this study, however, to report on all of it. Major emphasis is given to experimental studies, analytic articles, and contemporary publications of articles by various organizations, individual teachers, educators, and university research centers. There are many valuable books on this topic such as Dewey's How We
Think, Russell's *Children's Thinking*, Boraa's *Teaching to Think*, and others. On the other hand, many of the books in the field are of the "cook book" style. They assume that if teachers or readers follow what they prescribe, improvement in reflective thinking will follow. They are oversimplified. Books that present a synthetic, clear, and scholarly analysis on the bases of contemporary experimentation are rare.

The second source of the data is from responses of teachers to the latter part of the questionnaire. Teachers were requested to list and briefly describe methods, materials, procedures, etc., they generally use in teaching to develop reflective thinking.

**Procedures for Developing Reflective Thinking Reported in the Literature**

The results of the study of the literature will be presented under the following headings: (1) general proposals for developing reflective thinking, (2) proposals dealing with curriculum and method, (3) proposals dealing with evaluation instruments, (4) proposals dealing with abilities and skills involved in reflective thinking, and (5) proposals dealing with attitudes.

**General proposals for developing reflective thinking**

1. To develop a workable and successful school program in developing reflective thinking, teachers should
study and determine the nature of thinking in the light of basic philosophical and psychological findings.

2. Schools need to realize that the development of reflective thinking is not a simple task. It is like a way of life involving dispositions, skills and abilities in dealing with problems.

3. The ability to think should be thought of as a developmental process in which certain experiences are necessary preliminaries to others.

4. The development of reflective thinking cannot be fostered adequately by a single teacher within a system. It should involve the whole staff of the school, and still better, the whole staff of the school system.

5. An effective, positive step in helping students to acquire the necessary working knowledge of the skills involved in thinking is through direct purposeful instructional provision.

6. The dualism between the acquisition of subject matter and the development of thinking is detrimental to an effective programming in which the development of thinking is sought. Just as the acquisition of factual subject matter, per se, contributes little to the development of thinking; the development of thinking without subject matter is unthinkable and unreal.
7. All subjects, can be so handled as to contribute to the development of reflective thinking.

8. Individual students need to be encouraged to integrate their experiences into workable, tentative systems, and the reflective process is an effective way to bring this out.

9. The general overall objective of developing reflective thinking needs to be broken into specific meaningful sub-objectives. And this should be in terms of students' interests, values, needs, maturity levels and environment.

10. Once identified into meaningful sub-objectives, a well thought-out and carefully designed practice must be provided for students in all possible situations.

11. The teacher's persistent and insistent use of real problems and perplexities in class discussions contribute to an effective and reflective development of the habit of thinking.

12. Presenting alternative approaches to finding the solutions to problems, and getting students to compare the results of acting on the bases of these alternative approaches, helps students to appreciate more the values of the reflective process.
13. The cultivation of imagination and curiosity, and the rewarding of originality, are indispensable elements to the development of thinking.

14. The ability to comprehend language with accuracy and discrimination is one of the most important aspects of ability to think reflectively. Systematic instruction to improve the use of students' language is indispensable.

15. Some teachers reported that a few selected and sharp experiences in the process of thinking often result in a much more rewarding situation.

While the above generalizations have direct bearing on the organization of the curriculum and classroom procedures the following generalizations are more concerned with this phase.

**Proposals dealing with curriculum and method**

1. Current teaching methods are insufficient as a means of promoting satisfactory growth in the ability to think reflectively.

2. There is a definite need for the inclusion of reflective thinking in the secondary school curriculum. The most effective way reported deals with the improvement of the quality of thinking of the teaching staff.

3. There is no one golden method peculiarly and solely appropriate for teaching the habit of reflective thinking.
4. The task involved and the purpose of the task largely determine the particular method to be used.

5. The use of plurality of approaches is found more conducive to the cultivation of the habit of thinking.

6. The discussion method promises to be more successful in evoking complex problem-solving processes, and in developing the intellectual abilities and skills of students.

7. The lecture method is found to be more successful in imparting and comprehending information. It is also found successful in arousing the interests of students, if used cautiously and discerningly.

8. Emphasis on the method of self-discovery with good teaching guidance is found effective though difficult and time-consuming.

9. The involvement of students in planning, discussing, and evaluating in classes, and the use of positive encouragement, praise and recognition for success, are important in a successful program for the development of the reflective habit in students.

10. Teachers should utilize every opportunity to stimulate students to subject their beliefs and actions to critical analysis.
11. In classrooms, the manner in which student answers are handled is often more important than the questions posed by teachers. Therefore, teachers should consider the answers of students whether right or wrong and help them to test their validity.

12. The classroom should be a laboratory for creative thought and action. The maintenance of a friendly, informal, flexible environment, an environment that invites the asking of questions and that promises the respect for honest answers, above all, an atmosphere where no student fears being laughed at, ridiculed, or censored for saying the wrong thing, is central and contributes to a healthy development of reflective thinking. The creation of a more relaxed, less hurried school day is also found helpful.

13. Instructional materials appropriate to the development of reflective thinking can be developed through the cooperation of teachers and administrators as the needs arise.

14. In developing instructional materials for promoting reflective thinking, it has been found more effective to break down the general concept into a number of specifically identified skills rather than to deal with the concept as a whole.
15. Resourceful teachers use varieties of instructional materials: textbooks, supplementary books, field trips, audio-visual aids, resource units, community, free and inexpensive materials, and the like.

16. The creation of situations that will expose students to thought provoking experiences are found to contribute to an effective reflective atmosphere in the school. Confronting students with problems, and constantly aiding them to solve these problems by a variety of approaches giving them the time to solve their problems, arranging the conditions whereby more effective thinking may take place, were in general the characteristics outlined above in the sixteen items.

The central position played by the presence of a problem was in general agreed upon as being indispensable. Teachers, therefore, advocated the use of a real problem, problems that are real to students because these problems concern them personally and/or because they are significant to the society of which they are citizens. Many teachers, therefore, suggested the development of tentative criteria, taking into account many factors such as the nature of students, community, and other basic philosophical and psychological considerations. Such items as the
following were reported as being helpful and successful guides to many communities in different school systems.

1. Does the problem lend itself to teacher-student planning?

2. Is it appropriate to the experience, interests, maturation and abilities of students concerned?

3. Will the solution of the problem make a difference in the lives of the students concerned?

4. Does it make possible the grouping of students for common experiences?

5. Can many of the facts be gathered by the students from first-hand experience such as field trips, interviews, observations, books, etc.?

6. Are resources available for gathering the needed data?

7. Can the problem be dealt with satisfactorily within the time limit of the school or class program?

Proposals dealing with evaluation instruments

Although it was realized that a constant and effective evaluation of students' progress in reflective thinking is essential, much of the procedure is still heavily of a subjective nature.

The following practices are reported in the literature.

1. The use of the essay type of examination.
2. The use of teacher judgment, e.g., letters to parents.

3. Reaction of administrators and others.

4. Interviewing or conferring with a student or small groups of students.

5. The use of teacher made written tests.

6. Parents' observations.

7. Students' self-evaluation.

8. Use of anecdotal records.

9. Administering standardized tests. Tests such as the one by Wrightstone, Progressive Education Association, Watson-Glaser are frequently used. Gibbons' "Tests in the social studies," Tyler's "Measuring the Ability to Infer," Morse and McGone's "Selected Items for the Testing of Study Skills" are frequently mentioned.

Proposals dealing with abilities and skills

Educators and teachers seem to agree that it is necessary to identify certain of the basic skills, abilities and attitudes to be developed and cultivated, if the thinking is to help students gain competency in reflective thinking. The following abilities are reported in the literature.

1. To sense, recognize, locate and define problems.

2. To make and select the most likely hypothesis.
3. To plan and make new observations.

4. To invent and carefully plan experiments to test hypotheses.

5. To use controls.

6. To isolate the experimental factor or factors.

7. To exercise great care and accuracy.

8. To recognize and evaluate assumptions with regard to tenability.

9. To distinguish between fruitful and unfruitful methods of solving problems.

10. To distinguish between observation and inference.

11. To distinguish between facts and opinions.

12. To gather and marshal pertinent facts.

13. To evaluate data, appraise evidence, or procedures.

14. To organize material.

15. To make generalizations and inferences from facts and observations.

16. To draw warranted conclusions.

17. To evaluate conclusions in the light of facts.

18. To recognize errors and causes of errors.

19. To comprehend and use language with accuracy, clarity and discrimination.

20. To reconstruct one's patterns of beliefs on the bases of results and wider experience.
Proposals dealing with attitudes to be fostered in developing reflective thinking

1. The disposition to analyze proof critically.
2. The willingness to accept or reject assumptions tentatively.
3. The attitude of wanting to have supporting evidence for opinions before assuming them to be true.
4. The attitude of intellectual honesty (responsibility).
5. The attitude of open-mindedness.
6. The attitude of whole-heartedness.

Summary

The review of the literature shows that if reflective thinking is to be developed in the secondary schools, one of the major purposes must be defined as progress in the development of reflective thinking. Scope and sequence of the various grades must be outlined as areas within which reflective thinking may be developed. Classroom atmosphere and procedures must provide opportunities for developing reflective thinking. Instructional materials must be selected and prepared to contribute to the development of reflective thinking. And the evaluation of students' growth must be described in terms of the ability to use reflective thinking in solving problems of living.
General suggestions for developing reflective thinking made by the selected group of teachers

Fifty teachers out of ninety-three (54 per cent) replied to the last phase of the questionnaire by listing briefly the methods, techniques, instructional materials, classroom atmosphere, etc. which they use in developing reflective thinking. The answers are summarized in the following section under the following headings: (1) General proposals, (2) Proposals dealing with curriculum organization, (3) Proposals dealing with general classroom procedures, (4) Proposals dealing with classroom atmosphere, (5) Proposals dealing with specific techniques, (6) Proposals dealing with instructional materials, and (7) Proposals dealing with types of questions used.

General proposals

1. Reflective thinking should permeate the whole educational activity of each classroom teacher.

2. Clear understanding and persistent actual practice of the function of teachers as guides to students, rather than bosses, is basic.

3. Definite exercise or practice given in the process of reflective thinking, helps growth in that direction.

4. The school's analysis of the various meaningful sub-divisions of each of the larger steps of thinking, accompanied by suggested ways of developing them, is found by teachers to be very helpful.
5. Systematic and incidental motivation of students on values of reflective thinking are found to be helpful.

6. Teachers' emphasis on "why" students do what they do, develops a thorough and critical habit of behaving.

7. The relating of class discussions to life situations creates interest in the classroom.

8. Emphasis on constant self-evaluation by students develops purposive behavior.

9. Emphasis of open-mindedness on the part of students was thought to require direct attention from the teachers.

10. Presenting more than one side of the problem is found helpful in exercising judgment, especially if the issue related to current social problems.

Proposals dealing with curriculum organization

1. No specific curricular organizations was mentioned as being definitely superior to another.

2. Broad preplanned problem areas approach was suggested as being very helpful, but not absolutely necessary.

3. Rigid, prescribed, curricular situations were thought to be hindrances to reflective thinking.

Proposals dealing with general classroom procedures

1. The use of the reflective process as a method of teaching is reported as far superior to any other method,
yet, the most difficult.

2. Opportunities should be provided for students to be trained in the use of the syllogism.

3. The lecture method was reported to be successful in arousing interest and supplying information.

4. The small-group discussion approach was reported to be effective and usable even in large classes.

5. With selected students the "Socratic method" was reported to be useful.

Proposals dealing with classroom atmosphere

1. Maintain a reflective atmosphere throughout the year in the classroom.

2. Develop a warm friendly rapport with students.

3. Develop a climate in which students feel free to say what they want to say.

4. Teachers must be as honest and open-minded as possible.

5. Never let a student get the feeling that he has reached the top in thinking ability.

6. Never belittle students' effort to attempt to solve problems.

7. Listen respectfully and sympathetically to students' views.

8. Have a quiet moment in classrooms—encourage actual meditation at times.
Proposals dealing with specific techniques

1. Constantly challenging students' statements.
2. Insisting that all statements and opinions be supported by evidence.
3. Insisting on clarity of words used: "what do you mean?" "are you saying what you intended to say or can you reword your statement to make it more definite?"
4. Using individual conferences after school.
5. Giving direct instruction and exercise to prepare students to face logical fallacies wisely.
6. Using debates, round tables, panel discussions, party platforms, and the like to create as a realistic situation as possible.
7. Asking for frequent short papers.
8. Using supervised and directed practice.
9. Asking individual student or group of students to make a research study and give both an oral and written report.
10. Never giving an answer that is in the students' textbooks.
12. Giving differentiated assignments to take care of individual differences in students' ability to think.
13. Emphasizing illustrations, examples, specific situations.


15. Reviewing and summarizing at intervals as needed.

16. Inviting guest speakers to class.

17. Encouraging extensive individual reading.

18. Posing a question: and encouraging as many comments as possible.


20. At times, ending the class by a question or questions.

Proposals dealing with instructional materials

1. Teachers report that all instructional materials can be used to an advantage, depending on how they are used.

2. In general, diversified materials expressing differing points of view, should be used.

3. Current materials such as speeches, editorials, advertisements, TV's, radio's, etc. are available.

4. More than one textbook in any subject matter area should be used.

5. The best instructional materials are those that are developed by each school system or school taking into considerations its unique environmental circumstances
and situations.

6. Audio-visual materials in connection with other instructional material can be used to develop reflective thinking.

Proposals dealing with types of questions used to evaluate student progress

1. Essay examinations are still preferred by teachers as being the most effective, e.g., "Explain," "Why," "What is meant," "State in your own words," "Which of," "Distinguish," "Comment on," "Outline," etc.

2. Other varieties of the essay examination are as follows:

   a) A series of topic sentences are presented to students and they are asked to develop them into a paragraph using specific illustrations.

   b) Students are presented various themes, and requested to develop topic sentences, then paragraphs.

   c) Questions requiring students to be "into the shoes" of others, e.g., "What would you do if you were in ___________ place?" "How would you act if you were in the position that ___________ was?"

3. Extensive use of multiple choice type of objective tests.

4. The completion type of the objective test has frequently reported also.
5. In special situations oral examinations, to evaluate reasoning process and clarity of expression, are recommended.

6. Direct personal student-teacher informal conversation is reported as helpful.

Summary

The responses by the teachers were very similar to the suggestions appearing in the literature. Both emphasize the permeation of the reflective attitude, reflective atmosphere, reflective method and reflective process in the school's philosophy, curriculum, teachers' disposition, use of instructional materials, and the creative classroom atmosphere. Both reports favor plurality of approaches in developing reflective thinking. The teachers' responses indicate the superiority of the reflective process. This they believe to be difficult and to take time. The teachers' response gave more concrete illustrations of techniques and types of questions than did the literature.

Chapter VIII will discuss the specific practices used by teachers in overcoming obstacles arising in the classroom.
CHAPTER VII
SPECIFIC PRACTICES OF TEACHERS IN OVERCOMING
OBSTACLES ARISING IN THE CLASSROOM

Introduction

The identification of specific practices used by teachers in overcoming each of the obstacles was the second purpose of the study. The following chapters present the findings from the questionnaire and from the investigator's visits.

The Questionnaire

The preparation, content and analysis procedures of the results were explained in Chapter IV, and need not be repeated here. It is sufficient to note that teachers, after rating each of the obstacles, were also requested to list and describe illustrations of practices for each of the obstacles they felt they had successfully overcome.

Visitations

The other source of the data was the writer's visitation to selected schools. The purpose of the visits was to get further insight into the actual classroom practices used by teachers in overcoming these
obstacles. It was also thought that a first-hand personal visit to the schools in different states would help the investigator secure a deeper understanding of the school situation. It was a way, also, of serving a further check on the practices reported by teachers in the questionnaire.

The next questions to decide were which schools to visit, how long to stay in each school, and what method or procedure to use when visiting.

Because the nature of the problem demanded cooperation from qualified teachers and forward looking schools or school systems, the selection procedure was critical. After analyzing and considering different approaches, it was decided to select teachers from the schools that already had participated in the completion of the questionnaire. This was further preferred because of the interest shown by those schools, and the acquaintance of teachers and administrators with the study.

Lack of time and finances restricted the visitations to the mid-Western region. This restriction was not considered to be serious, because the majority of the questionnaires were returned by teachers from this section. Accordingly a personal letter was written to eight schools in four different states requesting their cooperation, explaining the nature of the study briefly,
and the reasons why that school was selected. The letter also included the proposed date of visit in the school. All the schools replied affirmatively. As two of the replies arrived late, however, only six schools in four different states were visited. Among those visited were two senior high schools, two junior high schools, and two junior-senior high schools. One of the junior-senior high schools was a university laboratory school, the others were public schools. The university laboratory junior-senior high school was visited for a week and the rest were visited for three days each.

During the visit the writer reported first to the principal or someone designated by him. The writer was then given a bird's eye view of the school's philosophy, curriculum, teaching staff, nature of the community, and the like. Following this a tentative one, two, or three day schedule was set up. The writer used a combination of the following techniques in his three or more day visit.

1. Observation. The writer attached himself to a key teacher and stayed in his class for one or more periods. In all cases preference was given to teachers who had completed the questionnaire. In a few cases the writer moved from class to class in the same period or in different periods.
2. **Conference.** Observed teachers and a few others were interviewed by the writer as soon as suitable free periods were available. This procedure was found by the writer to be the most effective to get clues with regard to teachers awareness of the presence of obstacles and with regard to the practices they use in class to overcome them. While conferences with teachers concentrated on the topic of actual classroom practices, those with principals and other administrators concentrated on teacher preparation, qualification, in-service programming, school-community relations, nature of researches undertaken and the like.

3. **Incidental observation and chat.** The writer took advantage of such opportunities as the lunch hour, between classes, after school, or, in certain cases, evenings, to observe or converse with teachers.

4. **Discussion during staff meetings.** Three schools gave the writer a chance to raise issues and discuss problems during a general high school staff meeting.

5. **Review of instructional materials.** Any school publications that might give further insight into the nature of the study were studied.
Procedures in Reporting the Results

Results of the data gathered as described above were organized and reported under one or more of the obstacles. The practices related to each obstacle will be reported under two headings: practices and comments. This is followed by practices identified from visits. In certain situations the report of the visitations appears at the end of two or more obstacles if the practices identified are similar or applicable to more than one obstacle in the same category. The practices from the questionnaire and visitation are summarized and grouped while the comments are reported verbatim. A summary appears at the end of each obstacle or group of obstacles.

For purposes of reporting, the twenty-five obstacles were grouped into three over-arching areas, each of which makes the content of one chapter.

1. Specific practices of teachers in overcoming obstacles pertaining to the classroom. This section includes items 1 to 6 and 23 to 25 inclusive.

2. Specific practices of teachers in overcoming obstacles pertaining to the secondary school curriculum, institutions of higher education, and research. This section includes items 14 to 16 and 7 to 11 inclusive.
3. Specific practices of teachers in overcoming obstacles pertaining to community and miscellaneous influences. Items 12 to 13 and 17 to 22 are included.

This chapter presents the practices and comments dealing with the first section.

Obstacle 1: Teachers' lack of understanding of reflective thinking and its role in individual and group behavior.

Practices identified from the questionnaire:

(1) Graduate work with major emphasis: (a) the works of great philosophers and scientists by taking courses in the history of science, and the history of philosophy, (b) courses in traditional and modern logic, (c) courses in the psychology of thinking, (d) cultural anthropology with the view to getting an insight into why people behave as they do, (e) courses in adolescent psychology.

(2) Inservice education consciously planned to introduce teachers to an understanding of reflective thinking; (a) summer workshops (reviewing present practices, building courses of study, reviewing materials used in classes), (b) cooperative research by a team of teachers or individual teachers on school problems and community problems.

(3) Study committees, staff meetings, and group discussions: (a) professional discussion emphasizing the role of reflective thinking, (b) study committees to investigate what is known about reflective thinking and its implementation in classrooms, (c) departmental study committees, e.g., the English department may organize four committees on the four levels of instruction (freshman-senior) to prepare materials for use in teaching reflective thinking and
initiating procedures in the classroom, 
(d) discussions and demonstrations at 
departmental meetings.

(4) Independent individual study and 
reading: (a) thorough reading of selected 
works on the subject, e.g., Dewey's How
We Think, Duncker's On Problem Solving, 
Wertheimer's On Productive Thinking, 
etc. (b) study of experimental reports 
in professional journals, (c) publication 
of individual or group research, (d) 
discussion with principals and other 
persons in supervisory positions.

(5) The presence of stimulating leadership; 
(a) creating and maintaining sensitivity 
on part of teachers, (b) providing materials 
-books, brochures, audio-visual aids) for 
teachers to study and use in classrooms.

Comments

I believe that most teachers understand 
the importance of reflective thinking, 
but that they cannot do as good a job as 
they would like to in developing the skill 
because they are so swamped with details 
that they lose sight of the overall 
objectives.

I have long believed that teachers of 
subject matter at the secondary school 
level should have a liberal arts education 
in a college which will develop under­
standing and appreciation of reflective 
thinking.

A teachers' lack of understanding in any 
field is an obstacle in using that field. 
This is much more serious in reflective 
thinking because it is basic to our demo­
cratic way of life and yet many of us are 
trained very poorly.
Teachers and administrators need to be very alert to catch any opportunity that may improve the competency of teachers and administrators. In my experience attendance in inservice programs and return to academic study have helped substantially to identify and reduce the extent of the problem.

Discussions with principals and other persons in supervisory positions have also helped to minimize the problem further. Self-analysis techniques, etc. being employed have also aided.

Summary of Practices and Comments

Varieties of practices were mentioned as being successful in overcoming this obstacle. Practices of taking further selected courses in graduate work, inservice education, the organization of committees, staff meetings and discussions, the use of independent, personal study and reading, the presence and maintenance of an alert and stimulating leadership were mentioned by teachers as being successful.

The comments seem to affirm that this is an obstacle, that at times other factors account for its existence, and that attending inservice programs and conferences with administrators helps to minimize the seriousness of the problem.

Obstacle 2: Teachers' lack of skill in guiding students in the development of reflective thinking.

Practices Identified from the Questionnaire:

(1) Teachers believe in the importance of adequate preparation in subject matter of
instruction. Competency in subject matter is a "sine qua non" for the use of skill.

(2) University training both in graduate and undergraduate levels stressing courses in: (a) philosophy, especially theory of knowledge and logic, (b) psychology, (c) group dynamics, (d) research projects in which students are seriously involved in undertaking research.

(3) Inservice education: carefully planned and directed at the improvement of teachers' skill in guiding students in the development of reflective thinking.

(a) Inservice education in which teachers were involved in actual researching was found rewarding.

(b) Inservice programs that stressed thinking rather than straight lecturing or drilling and mere theory were found very popular among teachers.

(c) Projects in action research during the school year followed by a short summer discussion were found very penetrating.

(d) Inservice education in which teachers were involved in either (i) reviewing presently used skills by teachers in their attempt to develop thinking or (ii) carefully outlining skills involved in thinking and providing curricular experiences, (iii) reviewing materials used by schools with major emphasis on their contribution to further the identified skills, are helpful.

(e) Summer school observation experiences in classes where teachers are gifted in stimulating thought. This observation should be followed by conferences or discussion with the observed teacher, or teachers.

(f) Inservice education in which the themes of "planning" and "evaluating" are explored in detail putting major emphasis on thinking.

(4) Workshop experiences: during school as well as after school. Could be local, systemwide, state-wide or nation-wide. The success of these workshops is thought to be in the identification of the areas to be explored, and in the selection of the workshop leader and in the creation of a
stimulating atmosphere.

(a) Careful study of student needs, interests and the skills involved at various developmental levels.

(b) Workshop directly aimed at improving the reflective competency of teachers. Such topics as "laboratory procedures and thinking," "student research initiation," "group dynamics," "workshop in techniques and abilities involved in the thinking process" were found very stimulating and satisfactory by teachers and administrators.

(c) Participation in university workshops in reflective thinking helps to broaden teachers' approach to this problem.

(5) Departmental and professional meetings and activities:

(a) Group discussions within and/or outside departments as regards procedures to implement reflective thinking in classrooms.

(b) Observation of other successful teachers in class activities preferably in the same subject matter area.

(c) Provision of demonstration lessons in laboratory schools if readily accessible.

(d) Teacher-teacher conferences.

(e) Teacher-principal conferences.

(f) Teacher-supervisor conferences.

(g) Organization of committees to develop materials for use in the teaching of reflective thinking.

(h) The careful use of group planning and discussion among the staff.

(6) Helpful individual teacher projects and dispositions:

(a) Visiting classes in same or other schools,

(b) Using provocative questioning techniques.

(c) Practicing in self-evaluation.

(d) Emphasizing asking "why" to students.

(e) Emphasizing testing "ideas" suggested by students.

(f) Creating an awareness that teachers should guide students toward their own answers, rather than to tell them.
(g) Analyzing and studying the processes involved in researches dealing with one's own field of specialization.

(h) Convincing oneself that a certain minimum of trial and error is inevitable in undertaking certain projects.

(i) Planning to attack the problem one at a time, e.g. helping them to suggest possible answers, helping them to gather the needed data, and interpreting them and concluding their findings.

(j) Undertaking an individual or cooperative research project regularly.

(7) Helpful administrative policies and activities:

(a) Maintaining an atmosphere in which teachers are encouraged to try new ideas, in which teachers are welcomed to talk things over.

(b) Planning staff meetings in such a way that these meetings themselves provide reflective experiences,

(c) Locating and utilizing helpful materials.

(d) Maintaining an effective audio-visual aids center and providing an authority in the field to help teachers utilize audio-visual aids in the development of reflective thinking.

(e) Publishing or mimeographing in bulletin or other form certain techniques reported by other teachers as being successful, and distributing them to members of staff.

Comments

Thinking clearly and honestly, reading thoughtfully, communicating effectively, and listening intelligently, are basic to the perpetuation of democratic ways of living; much can be gained by one needing skill as named if an adaptation of goals in language arts is made to new and forceful ideals of Western civilization.
Skillful use of provocative questions growing out of the student's experiences enabling him to analyze, compare, define, judge, and interpret seems to me to be the first attack on the problem. Otherwise, the student is not motivated to be reflective or to give responses which indicate that carefully organized considerations are apparent. He must have problem situations proposed to him that require more than a "yes" or "no" answer. Even when questions are cast so that a single word may indicate his reaction, the student should be asked to give reasons suggestive of the degree of critical evaluation implicit in his reply. This would seem to result in carefully thought-out responses. Good planning is clearly demanded.

Lack of skill on any area of teaching limits the teachers ability to use that area.

If the teacher lacked skill, I believe this would be an obstacle to the development of reflective thinking in her classes. However, I believe, that if she herself has learned the techniques of reflective thinking, she will develop the skills necessary to guide others in doing so.

I studied available texts on clear thinking to acquaint myself with fundamentals, then studied our English curriculum to see where (especially in our literature) examples of excellent and faulty thinking might be found. These I could then point out to students.

To help teachers improve in the skill of reflective thinking teachers should bear in mind to "ask intelligent questions, insist on answers based on facts. Allow students to discuss any question that has been sincerely asked. Don't insist on relevancy to topic you had planned to talk about." Teachers would improve their skill if they honestly launch a program to improve themselves as well as help their students. "We are developing a unit on science in the 7th
grade self-contained class. We use original stories by both the teachers and the pupils to aid in reflective thinking.”

Summary of Practices and Comments

The provision of activities in which teachers themselves are directly involved in improving their skill in thinking is thought to be much more effective than providing theoretical discourses. To implement such involvement, practices such as further university training, inservice education, workshop programs, departmental and professional meetings, individual projects such as visiting other schools, undertaking a study were found effective. The maintenance by the administration of a reflective atmosphere and one in which positive encouragement and praise are present, were found to promote a healthy and progressive attitude on the part of teachers.

The comments of the teachers also affirm that such a lack is indeed a serious obstacle and that an effective remedy is the improvement of the teachers' own skill in thinking by providing varied opportunities.

Obstacle 3: Teachers' lack of competency in the subject matter of instruction.

Practices identified from the questionnaire:
(1) The cultivation and maintenance of an attitude that constant professional growth is only possible through constant study and exploration of subject matter of instruction. Maintain the attitude of never being satisfied but always trying to learn more and more and more...teaching is learning too.

(2) University Preparation:
   (a) A more thorough training in the major field of teaching in both undergraduate and graduate course of study.
   (b) More emphasis of subject matter and less on education courses during the period of training.
   (c) More depth study of few courses rather than a superficial covering of many courses.
   (d) The inclusion of related disciplines to subject matter of instruction.
   (e) A good liberal arts background found very helpful.

(3) Inservice education to improve the subject matter of instruction:
   (a) More courses in formal academic training as a refresher, or deeper study, or survey courses to acquaint teachers with recent developments.
   (b) Serious study of curricular guides and courses of study and textbooks and supplementary books to review the extent to which these instructional materials are in line with the newer developments of the field of study.

(4) Local workshops and staff meetings and activities:
   (a) Inter-class visitation.
   (b) Departmental committee organization to research and report to staff members newer developments.
   (c) Departmental consultations and conferences.
   (d) Newer teachers conferring with older teachers in same departments on materials, procedures, methods, etc.
(5) Individual teacher projects and practices found very helpful:
   (a) Extensive and intensive personal reading on the subject matter of interest and related fields of study.
   (b) Constant upkeep in new development in the field through (i) professional organizations, (ii) review of current literature, journals, magazines, monographs, and books,
       (c) Associating oneself with at least one expert in one's field of study.

(6) Administrative practices found to be helpful:
   (a) Providing a well-staffed and kept professional library in the school.
   (b) Providing as much as is possible for periodicals in the various fields of study.
   (c) Providing for an administrative channel in which different journals and periodicals subscribed to by the members of the staff in the different departments get circulated among the other departments for a brief period.

Comments

The lack of proper background in subject-matter means that the facts, necessary to base reflective thinking on, are missing. Education in a good liberal arts college rather than a teacher's college will be of great value in overcoming this lack.

Keep studying your own subject. Never let down. There's always something new to learn on your subject. There's a new and different idea in another book, another land, another time, another person.

Competency in subject matter is a must.

We learn to do by doing; we learn to teach by teaching. We never know a subject until we teach it.
I have always managed to know what I am teaching. I make it my business to study the subject matter.

I think that when salaries are up and boards of education can demand and get people who are well-trained in subject matter, the situation will change. I don't seriously think we can change people (teachers). We must recruit teachers who want to teach and not baby sit. I think that teachers should be required to continue to take courses in subject matter.

Either more study or quit teaching.

Recognize that it is not always necessary for a teacher to know more. His role is sometimes to help students criticize method of approach.

Though the tendency for educators is often to shrug this off, I feel it is most important.

There is lack of depth in teacher's mastery of subject matter.

Most teachers are well-trained in their subject area. Those who are not are weeded out from the faculty.

Our teachers won't last long in our high school if they lacked competency in subject matter of this particular major. In any case one subject matter teacher helps another with his job.

If teachers are found to lack competency, then they had better have more courses in subject matter fields and fewer that emphasize methods. Knowledge of the field goes a long way in making a sensible person a good teacher.
Little can be done to improve this situation after the teachers have left college. Possibly colleges should demand more hours of work in teaching majors. The real problem is in attracting better qualified persons into the teaching profession.

Formal class (college) preparation not as important as a real interest in subject on part of teacher. Consider involving teaching in practical aspects of subjects.

When I have found myself in this situation, I've found the best way for me to acquire more skill in an unfamiliar field is: schedule experts to work with me, read intensively on my own, audit courses or go back to school, work with the children as they are learning in a new field.

The teacher, first of all, must have a degree of mastery of the subject tool; lacking this, he would be wholly incompetent to teach, whatever the subject. To overcome this, he would need to bridge the gap by a variety of means; prompt return to formal academic training might be the first step. A teacher with some degree of native talent can help himself overcome this by reading widely in the subject area concerned. He may still need some guidance that seems to me to come more readily in organized classes. Again, the kinds of questions and experiences through which the educand is taken is related to the quality of the teacher involved. Too, the purpose of the question may be more important than mechanics of phraseology.

Summary of Practices and Comments

More emphasis on the subject matter of instruction in undergraduate and graduate work and less courses in education is thought important. More thorough training in fewer subjects rather than a superficial covering of many subjects is advocated. Many suggested a good,
rigorous liberal arts training. Improvements were further suggested through such activities as further university course work, inservice education, workshops, the provision of a professional library in school or school system and the like. The comments strongly support the fact that lack of competency is a serious obstacle and that teachers need to remedy it as soon as possible. The comments also seem to suggest that teachers having this weakness should not be employed as teachers or that they should be weeded out as soon as possible. Furthermore the comments seem to indicate that teacher-training institution need to evaluate their programs with this point in mind.

Personal reading, associating oneself with an authority in the field of instruction were suggested as helpful.

Obstacle 4: Teachers' lack of conviction in the values of reflective thinking.

Practices identified from the questionnaire.

There was a general concensus by those who responded that conviction on part of teachers is in many cases a result of their knowledge and understanding of reflective thinking and their competency in the skills involved in teaching it. The following were suggested as being helpful in many situations at different occasions:

(1) Skillful and sympathetic supervision.

(2) Graduate course work and inservice education program dealing with:
   (a) An understanding of reflective thinking.
   (b) Skills involved in guiding students in the development of reflective thinking.
(c) An introduction to the life history of a selected number of scientists showing how their conviction in the long run helped them to discover a great thing of benefit to this world.

(d) Training in group dynamics, logic, and semantics.

(e) Further training in subject matter of instruction.

(3) Provision of opportunities for interpersonal and intergroup exchanges of views.

(4) Observation of school systems, classes and teachers that do a prominent job in this field followed up by conferences with principals or supervisors.

(5) Recommendation of good books in the fields of educational psychology, problem-solving, and criticism of the educational system as it now stands.

(6) Committee involvement of teachers who are undertaking serious project in the development of reflective thinking.

(7) Encouragement in undertaking research projects however small they may be, in an area which matters to teachers.

(8) An evaluation and reevaluation of significant researches done and reported employing control and experimental groups in different parts of the country at different times.

Comments

The beginning teacher can be made to realize the value of reflective thinking by observing competent teachers in action.

This is difficult to evaluate. I think that most teachers don't know what reflective thinking is. Those who really understand I think know the value of reflective thinking.
Most of us see the value, but lack the skill or knowledge.

Most of us recognize the value but how to transmit the fact that it is worth the extra effort is a problem.

Should a teacher lack understanding of reflective thinking, he or she could not have a conviction of its value. To me, the purpose of education is training in reflective thinking, the consideration of new ideas and their significances.

I believe teachers that understand the value of reflective thinking are apt to feel quite strongly about the need of developing this ability—especially in the social studies area.

If the teachers can ever observe what happens to kids when the classroom atmosphere allows reflective thinking to take place, they might change. A conference with three college students recently after they had observed a class in action seemed to open new avenues in their thinking.

A teacher must have a strong conviction in the value of reflective thinking, to begin with. If he lacks this, he may develop a wholesome conviction through professional inservice programs designed to point up its importance. Lack of conviction might result from lack of understanding of reflective thinking and from lack of skill in guiding students in the development of reflective thinking and from lack of competency in subject matter of instruction. The principal may help here to assist the teacher in formulating a conviction compatible to the felt importance of the worth of critical evaluation and thought.

Continued references by supervisors, etc. have sold the idea of reflective thinking; implementing the idea is the biggest task.
Teachers with this lack of conviction should not be teaching in a democratic country which basically assumes competency in making sound judgments.

One does poor work in any area he feels is pointless or not worthy of attention.

Impossible to convince teachers: they must slowly see the importance themselves.

Not lack of conviction about its value, but the belief that acquaintance with a body of knowledge automatically carries the ability to think reflectively about it.

I don't know of any practices that successfully can change the attitude of a teacher who has no such conviction, except perhaps through training in group dynamics, as well as logic and semantics.

A person, it seems to me, must believe in an idea before he can teach it to others unless he can remain completely unbiased.

Reevaluation at regular periods in the area of thought; knowledge of modern trends, sympathy with the basic school philosophies should be sought. Opportunities for interpersonal and intergroup exchanges during conferences, lectures, workshops aid in the formation of one's standards.

Summary of Practices and Comments

It was thought that lack of understanding and lack of skill in reflective thinking and lack of competency in subject matter of instruction are serious factors accounting for teachers' lack of conviction. Although it was thought to be somewhat difficult, the following practices were mentioned as being successful: Skilled
and sympathetic supervision; further training; provision of opportunity for interpersonal exchange of views among teachers; observation of other schools and school systems which are known to be doing a good job; encouragement of personal research studies on topics of interest to teachers; an introduction of teachers through the case study method of James B. Conant, into the life of prominent and significant thinkers.

The comments seem to indicate varied, conflicting views of teachers. Teachers indicate that lack of understanding is a big hindrance, and that schools should do everything they can to remove such an obstacle by varieties of practices. Others feel that exposing teachers to situations where thinking is valued and where it is concretely demonstrated in actual classrooms, is very helpful. Some teachers feel that if teachers lack conviction then their teaching too will be haphazard and devoid of the reflective method. Skillful supervision, sympathetic administration and further training were thought to be helpful.

Data from Visitation: The results of the visitation reveals the following.

1. Research studies by staff members:
In all the schools visited but one, the teachers and administrators thought that the undertaking of research is a worthwhile activity.

The research topics vary from locally pressing problems to nationally recognized ones. Whenever the problem is of national importance, it was mentioned, that in almost all cases it was done in cooperation with a university or professional organization conducting a study.

Secondly, teachers are encouraged to deliver speeches to important local and regional groups as well as to national organizations when the occasion arises. They all mentioned that the basic purpose behind all these activities is to give opportunity to teachers and administrators to do research, manipulate the skills involved in problem-solving, and give opportunity to organize material and communicate it to an audience.

2. In-service education:

Most of the school administrators mentioned that the moment they got convinced of the importance of reflective thinking, they organized some variety of inservice education in which the focus of attention was "reflective thinking and classroom procedures."

(a) University course work. - Teachers take regular course work in the evening and during summer.
(b) Summer workshops conducted at the local, regional and national level. It was thought that during such workshops much understanding and skill can be gained concerning "reflective thinking" if teachers are deliberately encouraged to state their problem, define it and carry it through.
(c) Inservice education, the "Action Research Way." Here a particular problem is cooperatively undertaken by one or more schools under the supervision of a consultant—throughout the school year. This particular approach was said to be extremely useful to
gain competency in the skills involved in undertaking a research study. But it was emphasized that an extremely qualified consultant should be secured.

One school system that undertook a workshop at the local level reported the following:

As the major objective of the school system includes the development of reflective thinking, it was decided to explore this particular phase at the workshop to be held during the summer. From time to time during the year teachers were requested to suggest activities involving the objective. As a result the following topics were chosen. "Evaluation in the High School," "The Psychology of Thinking," and "Scientific Method: its Implementation in the Classroom."

When the workshop started more than half of the time was taken to explore the meaning of the "scientific method--its relationships to thinking." "Processes in the scientific method," teachers were encouraged to read, discuss their findings from the literature.

In the second half of the workshop, "Actual Classroom Implementation in the Different Subject Areas" was taken up by teachers as group projects. Thus groups each consisting of "mathematics, science, language and social studies" were formed. This phase of the workshop was very enthusiastically received when teachers were asked to keep in view their classroom activity program when school opens.

"As a result" says the principal, "much awareness was present throughout the school year," Teachers ordered books that deal with the topic and began investigating the programs of other schools they heard about during the workshops.

3. Staff meetings and discussions:
Staff meetings when directly concerned with discussing problems related to the development of reflective thinking can be very fruitful.

One administrator related the following to the writer. A few teachers and I felt that there was a weakness quite noticeable in teachers' knowledge of and skill in reflective thinking. And yet we have prided ourselves that our school's objective emphasizes the training of independent thinking. So to remedy the situation the following series of activities were devised. One teacher on the staff who is generally well thought of as having a deep understanding of reflective thinking and who was skilled in dealing with it in the classroom was asked to prepare a speech on the topic: "Problem Solving: what it is and how to implement it in the classroom" The speech, followed by questions and discussions, was attended by staff members.

For the next 3 months teachers were given a list of books to read on the topic. Meanwhile, too, they were invited to attend and observe classroom instruction by the speaker.

This inter-class visitation was so enthusiastically received that a further inter-class observation in carefully selected classes in other neighboring schools was started.

A discussion on "Problem solving and classroom instruction" was conducted by one teacher each from mathematics, science, language, and social studies departments. A professor from a teacher's college moderated the discussion.

This was so enthusiastically received that most of the teachers enrolled in logic and semantic courses during the summer vacation following the closing of the school.
4. Permanent and Temporary Committees:

A well staffed and directed committee is thought to be conducive to further growth in thinking. These committees may be systemwide or local. Involving teachers in committees results in many cases in creating interest on part of teachers and developing conviction.

5. Participation in Professional Organizations:

This is especially successful if teachers are encouraged to select a few organizations and be active participants,—active in discussing, writing, speaking, and the like.

Intensive and extensive personal reading and studying helps teachers to keep up to-date with the latest writings in their field.

6. The Cooperative Preparation of Guides in Skills and Suggested Practices in Developing These Skills:

Many teachers and administrators suggested that the identification of possible abilities involved in thinking and suggested illustrations from various fields or subjects teachers teach, to be very successful and helpful in establishing a sense of security for those who feel insecure and incompetent in guiding students to think.

The following is an illustration of a twenty-eight page guide providing the abilities to be developed, understandings sought, the grades in which the abilities are to be applied.

The table of contents lists these seventeen abilities.

(1) Can tell when a term has been defined adequately.

(2) Can catch certain common types of errors of language.
(3) Can distinguish between an argument and a description.

(4) Can distinguish questions of validity, questions of truth, and questions of justification from each other.

(5) Can catch certain common types of errors in drawing conclusions about matters of fact.

(6) Can tell whether an inductive conclusion is warranted in terms of the evidence.

(7) Can identify an hypothesis.

(8) Can tell whether or not the variables in an experiment are adequately controlled.

(9) Can tell when a variable is relevant.

(10) Can evaluate the reliability of pieces of information.

(11) Can tell whether a given statement is a useful prediction from an hypothesis.

(12) Can distinguish between specific and general statements.

(13) Can distinguish claims of necessary relationships between states of affairs.

(14) Can tell whether or not a deductive argument is valid.

(15) Can evaluate different types of explanation and can tell what type of explanation is appropriate to a given situation.

(16) Can locate assumptions.

(17) Can tell when a value statement is justified. The same procedure is followed for each of the seventeen abilities.

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Each of these abilities is then dealt with in terms of words or expressions to be known, understandings sought, grade and subject to be introduced and subjects to be applied. E.g. ability #7: can identify an hypothesis. Terms to be known: when dealing with this ability it is recommended that the following words be known: hypothesis, predict, control and falsifiable. Understandings to be sought: the following four understandings were recommended to be emphasized. (numbers in brackets indicate grade levels)

(a) One of the major goals of science is the development of verified hypothesis, which can be used to predict and control events. (9, 10)

(b) An hypothesis is a statement which is about the world of events, and which is under test in a particular situation. (9, 10)

(c) It must be possible to make predictions from an hypothesis (11, 12)

(d) An hypothesis must be falsifiable. It must be possible to conceive of the kind of evidence that would lead to our declaring it false. (11, 12)

Subjects in which these understandings are to be introduced:

The four understandings are recommended for use in science, social studies classes.

7. Travelling experiences found effective: subject matter teachers, e.g. geography, history, problems of democracy, etc. are encouraged and means provided to travel to different key parts of the world to get first-hand experience and knowledge of different regions and historical developments of the world.

\[^2\text{Ibid., p. 12.}\]
Summary of Practices of Visitation

The practices identified from the writer's visitation are basically similar to those identified in the responses of the questionnaire. But the practices from the visitations seem to indicate more than the practices in the questionnaire, the importance of the administration in initiating, maintaining and encouraging such practices. They also seem to indicate that slow, long-range planning, and patient and a consistent forward-moving approach by the administration is required. Furthermore, the cooperation of administrators with teachers from the very beginning seems to give better results. The practices fall under such major headings as research studies by staff members, inservice education, staff meetings and discussions, participation in professional organizations, the cooperative preparation of guides by administrators and teachers and the encouragement of traveling in different parts of the world.

Obstacle 5: Teachers' use of conventional, less time-consuming methods of teaching (e.g. recitation, lecture) because of overloaded schedules, large classes or other reasons.

Practices identified from the questionnaire:

(1) Administrative practices:
(a) Distribute the load of extra-curricular activities equitably.
(b) Maintain class size as close to 25-30 as possible.
(c) Provide some free time during the day for teachers.
(d) Provide when possible clerical assistance for mechanical and extra duty assignments.
(e) Plan faculty meetings to discuss newer teaching methods and techniques and classroom stimulation.

(2) Use the lecture to arouse interest as well as to provide information.

(3) Use question and answer practices in class.

(4) Use group discussions, debates.

(5) Use conferences with individual students when possible.

(6) Train students to be responsible for performing under direct supervision many time-consuming mechanical details such as
(a) Checking the roll.
(b) Checking admit slips.
(c) Filling out the myriad of forms.
(d) Recording grades and others.

(7) Use student research projects and other differentiated assignments tailored to student needs.

(8) Use supervised drill.

(9) Use up-to-date teaching materials of various kinds and grade levels.

(10) Use of audio-visual aids incorporated into the daily teaching plans.

(11) Emphasize more serious preparation of lesson plans when class is large. Examine daily, if possible, lesson plans to eliminate unnecessary pattern repetition.
(12) Emphasize covering fewer topics with depth rather than many topics with superficiality.

Comments

It is difficult to develop an attitude of reflective thinking when the class size is large; however, some brief units can be used. A large class can be shown the syllogism in all its aspects. Once the concept of logic is established those students who are capable can be given further exercises on such subjects as their own ways or habits, recreation, personal tastes in music, political speeches, editorials, etc.

Committed to the idea that the teaching of clear thinking was important, I simply cut out materials so that I could include such teaching. Our curriculum was too tightly packed to admit additions.

English classes are time consuming and do not provide opportunities for extra work, but critical thinking can be incorporated into many studies of literature.

With present heavy schedules, what methods other than the less time-consuming ones can be employed.

Due to large classes, forty minutes periods, and the amount of material to cover, this has been quite difficult to overcome.

To put it bluntly: taking undue amount of time from my family and overworking to point of health hazard. This is partly an administrative matter, which has, in my opinion, been deliberately disregarded.

I feel that lecture is often the best method whether classes are large or not. It can be more time-consuming for the teacher if he carefully prepares lectures.
The addition of an X hour (7:30 class) has helped to alleviate overloaded classes.

Very often I fall back into these practices when I do not have enough time to prepare. I think that if I were observed more I would make more effort to prepare my lessons better.

Teachers who do not have a conviction of the importance of reflective thinking may use the above practices more often. It seems to me that time is important so others may properly use above methods occasionally.

Summary of Practices and Comments:

The practices mentioned fall under two large categories. The awareness of the administration of the situation and its provision of varied activities to alleviate the situation, and the use of other novel, interesting methods and techniques by teachers to make the best use of the situation.

Very interesting ideas are discernible in the teachers' comments. The comments seem to confirm that this is a very serious obstacle, and that overcoming it depends to a great extent on the initiative and resourcefulness of both administrators and teachers. Some teachers seem not to be bound by such limitations, for novel methods are used in large as well as small classes. The comments of the teachers seem to hint that the way to overcome this obstacle is through the administration
of the school in the initial planning and programming of the master schedule.

Data from Visitation:

1. Administrative Provision:

(1) Realizing that too much overloading of schedule interferes with important aspects of teachers' major function, and therefore the programming of schedules in such a way that teachers get free time at least one period each day; (2) Scheduling one afternoon each month in which teachers could get more time to discuss and exchange ideas, work in committees, etc; (3) Making sure that some teachers are not loaded with too many extra-curricular activities. (4) Providing regular periods for heads of departments and key teachers to meet from time to time during the school day to discuss ways to alleviate such a situation. (5) Making sure that some teachers' acceptance of more and more responsibility for many reasons such as seeking more popularity among students, more favor from administration and recognition from community will not interfere with their teaching quality.

2. Philosophical Decisions:

(1) The basic tenet that if reflective thinking is considered important then lack of time should not be used as excuses. (2) It is better to "uncover" rather than "cover" the ground. (3) In the long run the question of time is directly related to one's philosophical stand as regards long range outcomes sought by teachers and administrators.

3. Other Methods used by Teachers:

(1) Most teachers used variety of approaches in their classrooms. (2) The division of
large class into small committees or discussion groups. (3) The use of realistic methods that as much as possible involve many students. In Social Studies classes in some schools teachers divided the class into different parties, e.g. People's Party, Constitutional Party, United Party, etc. Each group was encouraged to draft a party platform. These party platforms were mimeographed and distributed to each student. Students then were asked to study these platforms and decide which one to favor. In another class during a study of the Judiciary System of the United States government an actual case was prepared by selected students and teacher. Then the class was divided into defendant, jury, judge, lawyer, etc. and the actual classroom conducted the trial with the teacher acting as the judge. Teachers mentioned that such procedures avoid the lecturing on the judiciary or party system of the United States; involve many of the students, often the whole class, some acting as evaluators of the process; and the interest shown by the students is always stimulating. (4) In some classes, teachers handed in an outline guide in the form of problems or questions to be studied by each student. The class breaks into small groups, discusses five or less of these problems and the next day, representatives from each group presents the findings to the whole class after which a general class discussion is followed. Teachers commented that such a procedure gives them some time during class to observe the process of the students reasoning and observe individual students difficulties. This method could be used in large as well as in small classes. (5) There was an extensive use of audio-visual materials, as springboards for small group and class discussion instead of straight lecturing. There was more use of films in science and history classes than any of the other subjects.
Summary of the Data from Visitation:

The result of the practices observed, basically support the practices mentioned by teachers. The visitations result, however, seems to emphasize not only the administration's contribution to alleviate the situation but also the basic philosophical decisions to be made and followed both by teachers and administrators. The extensive use of audio-visual aids was noted in the observations and was also brought out in the interviews with teachers, even though it had not been mentioned in the questionnaire by teachers.

Obstacle 6: Teachers' emotions, feelings, disturbances and/or mental blocks (e.g., wishes, desires, fears, self-interest, self-love, etc.)

Practices identified from the questionnaire

Because of the nature of the item, many reported that this is the result of the whole personality development of the teacher in his youth as well as in his university training. But the following were suggested as being helpful in many situations and as safeguards for situations in which such a case may arise.

(1) A clear and penetrating analysis of the role of teachers in a democracy. (a) realization that personal feelings and convictions should not dominate. (b) the development of a philosophy of education consonant with the basic tenets of democracy.
(2) Frequent self-examination, self-study and self-analysis. (a) to build and maintain self-confidence, (b) to cultivate and maintain objectivity in one's dealings with students in class as well as outside of class, (c) to keep knowing oneself better and deeper.

(3) Attempts to lead a balanced and relaxed social life: (a) belonging to certain clubs or group activities of interest to individual teachers, (b) cultivating hobbies, (c) maintaining a good physical condition, having an adequate amount of rest.

(4) Administrative activities of help to teachers: (a) a sympathetic understanding of teachers by the principal and vice principal, (b) the presence of positive school policy to support teachers in cases of need, (c) provision of a school counselor or a psychologist to help teachers as well as students, (d) recognition of teachers' contribution by administrators, (d) the undertaking of a study to determine the factors affecting teacher personality and the searching of remedies or prevention of such causes, (e) the exertion of all efforts to raise salary schedules if it creates financial security.

(5) The organization of workshops by school administrators on such topics as "maladjusted or disturbed teaching personalities," "factors affecting maladjustment of new teachers in the community...or..."

(6) Graduate course work during summer or during the school year in such topics as (a) psychology of adolescents, (b) personality problems, (c) the role of the secondary school in a democratic social order, (d) the changing family structure, (e) impact of the changing standard of life, class structure, and other factors on the profession of teaching.
Comments

If and when such factors are operative, they would be the problem of the individual teacher. Can't see how an evaluation can be made.

Again teacher insecurity in his position and his financial world cause him to take the path of least resistance and get away to pursue another task of job.

Teacher education and experience try to develop stability and maturity.

After second or third year little or no factor on the average.

I try to avoid letting my feelings interfere with the interpretation of a passage. Personally I dislike the tactics of Julius Caesar in his conquest of Gaul. However, I "bend over backwards" to praise his display of strategy and generalship.

A recent help has been a school counselor who has been added to our staff. He has recently been helping teachers to overcome some of the problems mentioned. Each principal and vice principal tries to help their teachers as well too.

To do their best, students must feel at ease in class; teacher can help by being at ease with students. (This does not mean an extremely casual 'buddy-buddy' attitude, or display of emotionalism on teachers' part) Be relaxed but businesslike; be well-prepared for each class session.

Forgetting yourself in enthusiasm over your subject and in your interest in developing the talents in each of your students--an endless joy.

Good physical conditions, an adequate amount of rest and arriving at school early enough to avoid rushing and to gather one's materials with deliberation.
Develop patience. Don't take things personal. Try never to let a student "get your goat."

I need to improve in this area. Economic insecurity, and some fatigue from outside work often interfere. Perhaps overidealism makes me, at times, impatient and over sensitive to situations requiring conformity. (Best solution to date, having a chile, a nice wife, enjoying my neighbors and working in the yard).

Helping teachers to see possible solutions to a problem after eliminating prejudice, fear, cupidity, preconceived notions and partisan loyalty.

I believe that the development of the habit of reflective thinking depends in great part on the personality of the teacher--especially on the high school level, where reflection for its own sake is a little too mature. Therefore, the teacher must do some selling, and I am afraid that many teachers do not possess such salesmanship ability. To overcome this obstacle would be more the responsibility of the administration.

Overcoming this obstacle was not accomplished by methods or techniques but by development of my philosophy of education.

I do a very poor job when my personal social life is inadequate. I find that when I do not have a weekend date lined up my interest in whether the children think is lower. Solution: I joined a church group and ski club. Result: the kids and their love affairs don't get on my nerves any more.

In cases where supervisors and principals have become "watchdogs" and exemplifying no inclinations to help young, inexperienced teachers to grow, these attitudes, etc. may have far-reaching effects. Erasure of these obstructions by improving personal relations seem to be acutely desirable.
Wherever this happens with experienced teachers, the approximate result may result, though perhaps to a less extent. The teacher concerned has a keen responsibility to try to effect an atmosphere which will not seriously impede the quality of his instruction.

This is difficult. A teacher must constantly work toward this control. Bias and prejudice must be overcome. Conscious effort must be employed constantly. Frequent self-examination is helpful.

The ability to handle one's own feelings and emotions could be a sign of maturity. Channeling one's emotions into constructive and pleasurable activity rather than into infantile behavior is, doubtless, the mark of a mature person. Also maturity implies the capacity for self-direction, an awareness of social responsibilities, and the ability to adjust rationally to his environment. Not the extent of knowledge, but rather his attitude toward that knowledge is what determines one's level of maturity. Overstreet in The Mature Mind speaks of a mature person as "not one who has come to a certain level of achievement and stopped there; but one whose linkage with life is constantly becoming stronger and richer." Enthusiasm for reading, appreciation of need for communication, creative reading, etc. tend to help one whose philosophy of life requires re-reviewing.

Summary of Practices and Comments

In most cases indirect practices were offered. Such practices, however, seem to indicate that the creation and maintenance of security in the life of teachers in the school, the community and other places
are basic to the cultivation of stability and balanced and controlled uses of emotions. The role played by the sympathetic and helpful attitude of administrators, as well as the recognition of teachers' success and the calculated use of praise and encouragement are reported by teachers to contribute to the creation of secure life in the school.

Many teachers gave many comments rather than practices. The comments strongly support the importance of stability and security as being important. Teachers' comments also seem to indicate that self-analysis, and self-evaluation by teachers are helpful. The maintenance of a vigorous physical condition and health was also mentioned as important. The help of school psychologists or psychiatrist was also mentioned as being helpful not only to students but to teachers as well. Some of the comments indicate that early background and upbringing are important aspects to be considered. There was a significant comment that the development of a wholesome philosophy of life by each teacher also contributes to the presence or lack of stability in the teachers' emotional reactions in the classroom as well as outside of the classroom.
Obstacle 23: Students use of faulty language expression or comprehension and/or the lack of adequate vocabulary.

Practices Identified from the Questionnaire

(1) The building of the conviction that all teachers are language teachers.

(2) The establishment of a strong English department.

(3) English teachers utilize varieties of ways to develop proper language usage:
   (a) Systematic study of vocabulary.
   (b) Emphasis on the understanding of technical and other terms and words.
   (c) Emphasis on definition of words met during reading or otherwise.
   (d) Careful correction of students' writings at all times.
   (e) Careful correction of students oral expressions at all times.
   (f) Encouragement of self-expression through creative writing, debating, discussion.
   (g) Individual and group attention on the various reading groups.
   (h) Constant exercises on vocabulary through word books, visual aids, etc.
   (i) Telling interesting stories of word origins or derivations.
   (j) Use of phonograph records as the occasion warrants.
   (k) Discussion on sample writings of the students mimeographed and distributed to students or at times through the use of opaque projectors.

(4) The establishment of reading clinics and laboratories for remedial purposes, as well as for improvement of good readers.

(5) The teaching of Latin helps to understand the origin of many words.

Comments

This obstacle has been inhibitory upon many of us as teachers because of the feeling that
low levels in these fields require remedial work first, before attempting to work with reflective thinking with such a group.

The teacher can help the student with some native gift to overcome this by planned activities. The reading clinic can assist with more educable children who may be somewhat retarded and who manifests these deficiencies. The classroom teacher can plan remedial programs and lessons to improve this situation.

Re-establishment of goals in the language arts program that seeks to develop in students the ability to think and to communicate and to understand the humanizing values of literature. National Council of Teachers of English urges teachers to show how language is to be used not merely as a medium of communication, but also for the expression of their own thoughts and feelings.

I often mimeograph complete paragraphs or sentences from several students' papers, for class discussion of accurate or faulty reasoning, wordiness, exactness of vocabulary, and general style. I also use the opaque projector for class analysis of compositions.

Continued reading instruction at the secondary level. When workbooks designed for this have not been available I have used timed reading of literature book stories and follow up comprehension tests. Vocabulary exercises of various kinds are very useful even at higher grade levels.

Do not have a separate language class, teach vocabulary all the time in all classes by all teachers.

Lack of adequate vocabulary is a difficulty that many students have to overcome. Use of many free reading books, Readers' Digest and other aids to vocabulary study are helpful.
Insist on precision of expression by questioning a student as to what he means by a statement, what criteria he is using, etc.

This is indeed a strong deterrent to clear thinking. One of the best ways to combat vocabulary deficiencies, I think, is to present a unit on the beginnings of words. The history of words itself is so interesting that I have found even the dullest become intrigued. Of course, this initial interest is followed up by the usual vocabulary work. Finally, there is no substitute for frequent free reading as an aid to vocabulary building.

We are constantly correcting their faulty language expression, helping them to comprehend in our reading laboratory, studying vocabulary in all our work. Lack of an adequate vocabulary is a real problem since they read comics and watered down classics.

Latin is a very fertile area for building vocabulary and word comprehension. Every time we meet a new word we consider its derivations. We build words on Latin root words such as facere to do or make, so explain manufacture.

Summary of Practices and Comments

Emphasizing that all teachers are teachers of language; constantly correcting wrong usages, building richer vocabulary; encouraging writing and speaking and meticulously correcting students' writings and speeches; using reading clinics for remedial purposes, are some of the major practices mentioned.
The comments affirm that a comprehensive school-wide emphasis on language by all teachers is preferable and more effective.

Data from Visitation

The results of the visitation fall under the following headings:

(a) Emphasizing on the use of precise meanings of words by students.
(b) Emphasizing on regular theme writing and careful correction by teachers.
(c) Giving plenty of opportunity to students to discuss ideas, to express themselves orally.
(d) Emphasizing on free reading of novels, stories, poems and literary magazines.

As is clear the practices mentioned are narrower than the ones identified from the questionnaire and are identical to them.

Obstacle 24: Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g. false analogy, over-generalizations, wrong inferences) and the lack of instructional provision to improve the situation.

Practices identified from the questionnaire

(1) Involving the whole staff is necessary for a successful activity.

(2) Sensitizing teachers through summer courses, inservice education programs or workshops or staff meetings and discussions or individual conferences, is at times necessary.

(3) Providing for direct instruction is very effective: this could be achieved through various approaches used singly or in combination:
(a) teach students to recognize, identify and evaluate the various fallacies such as (i) appealing to the sentiments of crowd and to fear, (ii) attacking the personality of a person rather than the issue involved, (iii) diverting attention to irrelevant considerations, (iv) basing conclusions on insufficient or incorrect facts.

(b) train students in the validity or invalidity of syllogisms.

(c) help students to differentiate between facts and opinions, inferences and generalizations, generalizations and conclusions, etc.

(d) watch carefully and point to students fallacies used by them in speaking and writing.

(e) analyze various political speeches in classes.

(4) Setting up staff meetings and discussions to develop instructional materials.

(5) Presenting a unit of work in logical thinking, or a simplified elementary course in principles of logic.

Comments

A major obstacle has been the abandonment in English and social studies of any (or much) discussion of elementary logical processes which must serve as a starting point. One can discuss syllogisms, premise-conclusion relationships, analogies, etc.

Some of this may be due to the child's fault and some to that of the teacher. A child can be taught to detect erroneous conclusions with diligent effort and insight by the teacher. Careful planning again seems needed. Analyses of certain faulty conclusions with students and implanting skills for detection are the tasks of teachers.

We work continuously on recognition of fallacies, but students don't always detect them, though they generally do when told specifically to look for fallacies.
One of the ways I attempt to develop interest in a class is to start an argument with "argument" used in the proper sense. Once the class is aroused, then the teacher can pinpoint fallacies used in the argument. The next step is to show the students how and why the fallacies occur, how to avoid them, etc. In other words, an attempt is made to show the students just how the mind functions when it is learning. When students' fallacies are put into syllogistic form (after the syllogism has been taught) they can more easily see their faulty reasoning. This can be done whether you are discussing the popular musical tastes of youth or the question of racial prejudice.

Summary of Practices and Comments

Sensitizing the faculty through inservice, workshop or staff meeting to remedy the situation and the direct instruction of the various fallacies to student through multiple learning situations in classrooms as well as outside of classrooms are helpful practices.

The comments tend to indicate that the teacher believes that the lack of teaching of principles of logic is the cause of this obstacle, and that teaching courses in logic will effectively remedy this situation.

The visitations confirm the fact that direct instruction by the teachers of the different subjects is a successful and effective approach.

Obstacle 25: The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family.
Practices identified from the questionnaire

It was thought by many teachers that students should be taken from where they are, whether they lack experience in this or that, or whether they need this or that. Teachers then can organize their educational program in such a way that what is meager is enriched what is lacking is supplied; what is potential is channeled, and what is superficial is deepened. To do these things teachers use few yet widely practiced activities such as the following.

(1) Field trips and excursions to the community, and outside the community.

(2) The wide use of various audio-visual aids to give at least various vicarious experiences.
   (a) radio programs,
   (b) good music,
   (c) well-chosen books,
   (d) outside visitors or speakers.

(3) Exhaustive use of the community resources.

(4) Introduction of courses in family living.

(5) Visitation of each other's homes by students.

(6) Decoration and maintenance of a good classroom atmosphere.

Comments

Students are increasingly more experienced for their age group from generation to generation perhaps even year to year. They travel more, see more documentary movies, television, etc.

It is my privilege to write short, short stories which help pupils to read to gain formation, by providing material which they understand and are able to read more quickly.

This may also be the case in a high socio-economic level!
Wherever this problem exists, teachers must encourage and provide in the classroom and the school generally more wholesome atmosphere to supplement the unattractive home atmospheres of their students. Providing the kinds of desirable activities not found in students' environment or found very meagerly is the job of the entire teaching staff. This work may well be begun by individual teachers in their classrooms and enlarged to include the entire school.

Even the attempt by every teacher to provide a taste of culture in the school will hardly overcome this obstacle. The home—despite the millions poured into public education—is still the primary factor in education.

Summary of practices and comments.

The central emphasis of the comments and practices is to enrich the experiential background of students by providing opportunities for engaging in real life situations or as close to reality as possible. The results of the visitations confirm strongly the practices mentioned in the questionnaire.

The next chapter will present the specific practices of teachers in overcoming obstacles pertaining to the secondary school curriculum, institutions of higher education, and research.
CHAPTER VIII

SPECIFIC PRACTICES OF TEACHERS IN OVERCOMING OBSTACLES PERTAINING TO THE SECONDARY SCHOOL CURRICULUM, INSTITUTIONS OF HIGHER EDUCATION, AND RESEARCH

This chapter presents the practices identified in overcoming obstacles related to the secondary school curriculum, influences of higher institutions, and the lack of basic research in the reflective process at various developmental levels.

Obstacle 7: Disagreement among educators on the applicability of reflective thinking to certain problems of living. (e.g., morals, religion, aesthetics.)

Practices identified from the questionnaire

(1) Staff discussions are held on the basic assumptions where educators differ.

(2) Workshops are set up in the school to investigate the various schools of thought pertaining to this obstacle in which educators differ and take a stand, and to formulate a position with respect to the role of reflective thinking.

(3) General discussions are held by the school staff to reach an agreement concerning appropriate problem areas to be dealt with in the school.

(4) The presence of open-minded administrators is considered to be a valuable asset in dealing with this obstacle.
Comments

I can see no way to overcome this as an obstacle. It is a fundamental philosophical disagreement.

This disagreement should rather stimulate reflective thinking.

This is a major obstacle since thinking reflectively seems most effectively done in terms of the totality of knowledge (at present compartmentalization seems to rule).

Teacher has to accept the fact of disagreement and stick to convictions he arrived at after reflective thinking of his own. Should always state that it is his opinion if he communicates a point of view that is not held by all other teachers.

On the method of applicability "yes," on the idea "no."

I encourage comparisons between such topics as "religion among the Romans and Ours," "Ancient Burial customs and Ours," "Marriage Then and Now."

These are concepts and value judgements of a very personal nature. I have not overcome all of my emotional feelings about authoritative thinking. I do not believe the scientific method can satisfactorily deal with the situation. Each culture developed different concepts. I believe we can benefit by a common denominator of religion without weakening ourselves. Pride in our culture and manners are lacking.

There is not much the individual teacher can do to overcome this obstacle. The difficulty seems to be that the word "practical" is badly defined in many cases. Reflective thinking just is not "practical" in the minds of too many.
This problem ought not exist, but where it does, teachers will greatly be restricted in the scope of their contributions. By wholesome personal examples of daily living, they might be able to contribute incidentally.

Summary of Practices and Comments

Understandably this item does not lend itself to the devising of practices by teachers, and consequently fewer practices and comments were given.

The practices include staff discussion, and workshop analysis of the alternative conflicting stands to decide which to favor or not favor. It was also suggested that the presence of an open-minded administration would minimize or eliminate this obstacle.

The comments, too, are somewhat conflicting. Some stated that this obstacle results from basic philosophical disagreements. Others suggested that the existence of these disagreements encourages the development of reflective thinking. Teachers in such situations need to utilize their reflective power to arrive at their position. But in general the disagreement is not so much on the "idea" as it is on the applicability.

Obstacle: 8 Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking.
Practices identified from the questionnaire

While many teachers emphatically responded that this situation is a very serious obstacle, they, on the other hand, did not give many illustrations of successful practices for the simple reason that they stated it is beyond their everyday sphere of activity. They, in many cases, remarked that more helpful suggestions could perhaps be obtained if one deals with the teacher-education institutions themselves. However, some gave the following activities as successful practices undertaken by them in their local school or regional school system.

(1) Further training in liberal arts colleges.

(2) Inservice education programs with a specific aim in mind to improve the quality of the thinking ability of teachers, and techniques of teaching to be used in developing reflective thinking.

(3) Workshop: with small groups, and ample group discussion, leading to (a) understanding the nature of man, (b) reviewing current literature in the field.

(4) Independent self-study and self-preparation, mainly through reading and research activities.

(5) Inter-class, and inter-school visits and observations, followed by small group or individual conferences with the observed teachers or principals, etc.

(6) Basic point of view expressed by teachers: Teacher education institutions should attempt to provide everything they can to foster and encourage thinking teachers, teachers that think independently for themselves and by themselves rather than swallow or tacitly absorb what professors have to say or books have to offer.
Comments

Beats me. It seemed to me that the two professors I had in a Human Development course didn't practice what they preached. It seems to me that a lot of educators do not think. They don't know what reflective thinking is themselves. This may seem critical but true, at least in my experience.

I was taught theory only, never given any practical example or illustrations.

I hope professors would spend less time talking about the desirability of reflective thinking and more about the processes and how to implement these processes in the classrooms.

Many teacher-education institutions fail most in giving enough subject matter courses.

So many student observers here seem astounded that Junior High students' thinking can have the depth they observe. I feel that they are more likely to change their point of view if they see good practices and have a chance to talk with experienced teachers about them.

In my experience one university supplied one professor who was interested in developing among teacher-students the principle of applying to the teaching of social studies the skill involved in reflective thinking.

I see very little being done to provide new teachers with a reflective thinking approach to curriculum problems.

Students in college get too few opportunities to think critically. They are encouraged to understand and "to give back." There are notable exceptions.
I know that __________ University does something about reflective thinking in their practice teaching training.

The inservice courses available to all of the teachers in __________ have been very instrumental in supplementing the offerings of educational institutions.

All instructors should be required to take a certain number of courses in the field of philosophy, logic, etc. I feel this should be a requirement for certification.

I refused to listen when my education instructors advised that knowledge was the least important attribute of a good teacher and took considerably more than the minimum number of required academic courses.

This too is a major obstacle since those teacher-education institutions do so much talking about reflective thinking, but do little to provide the groundwork needed. Self-preparation and subject mastery is needed. Each area of thought seems to require many different reflective techniques.

Quite a bit of revision is needed in college level work. A relaxed attitude needs to be developed at this level to demonstrate how rewarding teaching can be when classes are encouraged to think instead of parrot.

Some philosophy courses offered in teacher-education institutions do prepare teachers and administrators to do reflective thinking, however to overcome these obstacles one has to have the tools i.e. the vocabulary.
Take more subject matter courses, raise standards. May I pray that someone send a survey to universities specializing in "education courses" and ask graduate students their impartial views as to value and validity. (Had a great course once on how to set up committees which would appoint a group to form a meeting so that the committee could make a report on a plan for the next meeting which time it was necessary to appoint a new group so everyone could be a participant; a "leader." It boils down to "meetings are good—we need more meetings—so that we can decide where to have future meetings.")

Reflective thinking presupposes the ability to think and to will. Many teacher-institutions treat the human simply as a higher form of animal, but animal nevertheless. It is a shame that the greatest abilities of man—thinking, willing, loving—are subordinated to memorization and habit training. Overcoming the obstacle? May be the recent developments in the scientific world and the resultant spotlight on our educational system will serve the purpose.

The answer here would seem obvious. Therefore, wherever this is the case, the teachers concerned must strive to obtain the preparation needed in other institutions and inservice. Much can be gained from inter-class and interschool visitations, from helping teachers, and through serious independent study. While institutions of the kind mentioned must more readily meet this challenge, good teaching experience is an asset in acquiring the art and developing good questioning techniques.

Summary of Practices and Comments

The practices mentioned include such categories as enrolling in liberal arts colleges, inservice education, workshop programs, and interschool system visitations.
The majority of the respondents stated that many of the curricular offerings of teacher education institutions encourage parroting and passive absorption. The comments were rather numerous and varied.

Teachers unanimously supported the belief that this is a critical obstacle, that course offerings in colleges of education are not stimulating, that they are seriously compartmentalized, that courses are either loaded in favor of theory or practice. Teachers also unanimously commented that teacher-education institutions emphasize method courses to too great an extent, and place too little emphasis upon subject matter. Comments seem to indicate that much more conscious and direct effort should be exerted by teacher-education institutions to develop teachers who think reflectively through their methodological approaches, course requirements, evaluation practices and the like. Basic liberal arts preparation was suggested by many teachers as having helped them substantially.

Data from Visitation:

Principals and teachers did not give very many illustrations of practices. They suggested in many instances that an investigation of the teacher training institutions should be made. They, however, all mentioned the use of well-planned inservice education in colleges and universities, the use of staff
meetings and discussions, emphasis on personal reading of professional books and exchanging views with staff members, the constant active participation in curriculum committees and the undertaking of private research as being helpful to improve oneself in the ability to think.

Many of the practices mentioned in the first four obstacles apply also to this item.

Obstacle 9: Continued pressure of colleges for conformity to prescribed entrance requirements.

Practices identified from the questionnaire

While many teachers seem to agree that at times college prescription leads teachers to conformity and "cover the ground" philosophy, nevertheless, teachers still can use many ingenious approaches to permeate their teaching with reflective thinking. This item does not lend itself to illustrations for many teachers, correctly stated that this should be more the preoccupation of the administration in collaboration with the staff. Yet the following were suggested as being very helpful.

(1) Consultation of high school administrators with college admission officers.

(2) Workshop for high school and college administrators to find ways to articulate the work of the high school and colleges.

(3) Administrative stands: (a) clear statement to the colleges of the purposes of the high schools, (b) the establishment of counseling and guidance, (c) the investigation of what the colleges really do want.

Comments

Most subjects required for entrance lead to clearer thinking.
Entrance requirements pertain to curricular content, not method by which a subject is taught.

This is difficult to overcome, by teachers, yet is a serious obstacle.

This is a favorite alibi of some educators.

Much relaxation of this pressure as it applies to Carnegie "units" of work.

More reliance on the use of admission text and prior abilities and less on credits presented.

Reflective thinking should be possible even in areas prescribed for college entrance.

I made a close study of what colleges really do want and found that I could eliminate some of the things I had always thought colleges wanted.

Courses of practical nature are of little or no value for meeting college requirements. Yet they aid greatly in the teaching of reflective thinking.

Colleges, it seems, will be tightening up their entrance requirements—leading to more standardization of tests, more rigidity in course grade marks, allowing for little flexibility in assessing the value of a student for his ability to think clearly.

Schools ought to lean less upon this handy excuse.

Reflective thinking is a part of teaching, not foreign to it. Students should be encouraged to reason things out for themselves and such reasoning should be contributed to the class as a whole. Such additions would not affect college entrance requirements.
Far from being an obstacle, the entrance requirements are in many cases the only things left to motivate honest learning in the high school.

Sorry, but I like the prescribed requirements and believe in adhering to the academic standards of our past with some incorporated material to entrance values of critical thinking.

Since reflective thinking "is an active, persistent, and careful consideration of any belief..." it doesn't seem to me that entrance requirements of colleges would have direct relationships to this training since the teacher could very well insist to think out whatever material he is dealing with.

Some colleges are now using "student-high school administration panels" to arrive at satisfactory solutions to this common problem of entrance requirements.

Summary of Practices and Comments

There are not many successful practices mentioned. Teachers thought that either this is the task of the administration in their school or in the central office of the system-wide administration. However, they mentioned, consultation of officers concerned, the use of workshops in which authorities from both groups take part. The use of strong guidance and counseling services were suggested as being among the successful practices.

The teachers' comments seem to indicate that this obstacle is more apparent than real. They believe
teachers can successfully deal with it, as prescriptions
do not deal with teachers' approaches and methods they
believe that it is often used as an excuse by school
people, that, in fact, it can be helpful to the fostering
of thinking.

Data from Visitations

The results of the visitation seem to indicate that most of the schools have
accepted the standards set by the colleges and that they have established an elaborate
system of guidance or counseling. Some schools employ half-time college counselors.
These counselors interview students, confer with parents and teachers to give
students the best possible orientation as early as possible, taking into considera-
tion the probable region where the college or university of interest is located.

Administrators commented that the diversi-
fication of the high school curriculum as the comprehensive high school set up, meets
effectively the rigid college standard for it offers courses in line with students
interests and needs besides the college entrance requirements. Others mentioned that
an additional experimental study like the Eight Year Study might help to convince
colleges that they should ease their require-
ments. But in general the investigator
got the impression that most school people
take it for granted that such requirements are demanded and consequently they modify
their curricular offerings to meet these demands. The view was also expressed that
such requirements were adhered to because of community pressures.

Obstacle 10: Lack of basic research on the nature of problem-solving operations at
various developmental levels.
Practices identified from the questionnaire

It was realized by teachers that this is indeed an obstacle but it was found that it does not lend itself to teachers to provide illustrations.

(1) Doing research work by teachers as individuals or group of teachers: experimental or descriptive in connection with at least the classes one is dealing with.

(2) Utilize the findings so far researched and reported in everyday practice.

Comments

I believe it is not so much a lack of research here as an oversimplification of existing research. This may seem paradoxical, for it could be felt that this mere fact or admission suggests the need for more and better research in this area. Notwithstanding, I hold that children do not always seem to be challenged by the problem-solving operations in current practice.

I use what research I have learned about in respect to problem-solving operations. I use buzz sessions, brainstorming, sociodrama and other group dynamics practices. I use principles of logic...taught to students during use.

What one needs is simply and straightforwardly to undertake research work in this field. Thus first obtain a large grant. Secure courageously a number of statisticians and psychologists as counselors or advisors and then conduct the research first limiting it to your grade level and gradually extending to other grade levels.
One can't expect to help students think if one hasn't done some good hard thinking oneself. Thus stop talking and start researching in a small scale.

I think we know more than we utilize. Getting ideas and concepts across and into school faculties where practices have been similar for years seems to be more of a challenge. Inservice, workshops, alert administrators, dynamic curriculum directors seem a must.

There are ideas in the literature, however, schools ought to use more of them.

We were trying to do our own research, principally through the four committees (Freshman-Senior). We compiled material for use among teachers involved. It didn't hurt to do our own research.

Some research is available. I've looked at several books and periodicals on the subject. Much of the research is superficial. Personal solution is to work out one's own experiments in the classroom situations.

Summary of Practices and Comments

Few practices are mentioned by teachers. Practices such as undertaking research work by the staff in general or individual teachers in particular, the utilization of those findings in actual practical classroom situations are instances.

The comments while supporting the conclusion that such a situation is an obstacle seem to indicate that it is rather the oversimplification of existing researches that is the problem with teachers. Furthermore, teachers
seem to think that enough has been done, but as regards practical application teachers still lag behind. The commonly stated solution is the courageous undertaking of research studies by teachers rather than wait for other people to do the job.

No worthwhile result was identified from the visitations apart from the general agreement that there is a lack of research in problem-solving procedures, but much more important is the lag between theoretical findings and classroom applications.

Obstacle 11: The presence of faulty theorizing about problem-solving processes (e.g., tendency to rule out the 'aesthetic component' or feeling aspect of problem-solving processes.).

This item was thought difficult to comprehend by many teachers. Many stated that they do not know the various theories used or advanced to explain the processes of problem-solving. A few of the teachers gave their response in simple "comment" form as the following would indicate.

Comment

A thorough reading of different psychological theories and an alert observation of people may help.

Unfortunately there is a tendency too often among teachers (particularly social studies teachers) to try and define answers to problems in terms of a completely wrong or a completely right solution. There are more often than not many shades than black and white.
Study by the staff of such subjects as music or art which are inseparably linked with problem-solving approach creates an awareness of the aesthetic component which is highly present in such subjects and present in all subjects as long as man deals with them.

To date have found no way that is completely successful.

I try to show the children that it is impossible to deal with persons impersonally, to tackle any problem without some degree of emotional element. Every human relationship, problems in business, politics, family, etc. is a personal relationship because personal feelings and personalities are involved. Consequently the feeling aspect cannot be ruled out.

I believe that aesthetic components are necessary parts of the problem-solving processes. But aesthetic components should precede the logical, the social, or the psychological criterion.

We rule aesthetic component out because we can't teach it, 'quantify' it, or test it objectively. In short we can't handle it in schools to general satisfaction. A fairly defensible, yet defeatist attitude in education is to limit our efforts to those things which we can handle with some demonstrable success.

Care must be taken in the classroom to realize the all important 'feeling' aspect. It is rather hard not to recognize this today, however, with all the writings of the existentialists, and of those who attack modern liberal rationalism. (i.e., R. Neibuhr on Bertrand Russell, etc.)

What is needed is a lucid, simple exposition of what the research to-date indicates without any bias to one's inclinations.
This situation seems to us to exist basically because of the lack of our understanding of man or ourselves. So a study of the concept of self by self seems needed.

Summary of Comments

This item was not well understood by teachers as revealed in the comments given by them and further evidence elicited during the writer's visitation.

The comments indicate that there is a hazy realization that such separation is not justifiable and that people, being human, cannot avoid separating their feelings or emotions during the use of the process of reflective thinking. The lack of a lucid, unbiased theoretical formulation on the basis of the studies is thought to be another factor contributing to such a situation.

Obstacle 14: The fixed and prescribed nature of the school curriculum (e.g., courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved).

Practices identified from the questionnaire

(1) The core curriculum using the design of broad problem areas, utilizing student-teacher planning and evaluating is reported as having been successfully used.

(2) More than the integrated curricula, teachers in any field need to provide integrating experiences to students even in prescribed situations.
(3) The maintenance of standing curricular committees, or council to investigate regularly the approach that best meets the particular community situation was recommended. This committee might: (a) re-study philosophy and purposes of each course of study, (b) review the nature of adolescents at various stages, (c) review practices and procedures now used by the school, (d) review the skills to be taught, and (e) evaluate the above procedures in line with the school’s purposes.

(4) The maintenance of varied textbooks, supplementary books and resource teaching materials at various developmental levels helps teachers to use plurality of approach in teaching.

(5) The organization of inservice programs dealing with the obstacle in which consultants are available helps to create sensitivity on part of teachers and administrators.

Comments

Our curriculum for all subjects tends to direct teachers as to content possibilities but does not as to procedures.

Not enough to know facts, but must know why things are so and also know how to use the facts learned. To the above end, I use worksheets on each unit of study. No day-to-day page assignments are made. Sections of many books are given as reading references. Most of these are on closed reserve; some I have in my shelves.

Core curriculum provides an opportunity for exploration, selection and development of meaningful experiences. The problem is to get well qualified teachers to handle the situation.

Too much emphasis is frequently placed upon "finishing the text or course," "preparing for tests," etc. This does not generally stimulate independent thought.
Within the outline I try to develop concepts which lead to the solution or problems.

The course of study should be used only as a guide and not as the law. Concepts and ideas should be integrated into the course of study.

The astute teacher must decide how much of the content can be covered in terms of wholesome achievable products. He must be able to choose wisely the major content of the course which will permit the students entrusted to him to develop reflective skills commensurate with their abilities and rates of growth. The aim must be borne in mind that he is to teach the child, using as much of the subject tool as applicable.

The classroom teacher should have a voice in curriculum making. The classroom teacher plays a major part in this area in _______ school system.

Develop your own concepts from a serious investigation of the literature and colleague consultation and find the best way you can to promote them. I try to develop concepts in my students all the time.

I found that I could continue to teach most of the things the curriculum demanded but could change my approach or emphasis to clear thinking on a number of those things.

A master teacher is not bound by a prescribed course of study from developing reflective thinking.

Allowing for flexibility in the curriculum and for variation as well as the presence open-mindedness of supervisors, department heads, are helpful. Preparation of curriculum by a carefully selected body of teachers and administrators should allow for a fairer pooling of minds.
If the teachers understand the reflective process they would not let this bother them or stop them from doing what has to be done to help children think.

The development of a course of study in which the development of concepts and the solution of problems is the point of view has helped many teachers in our school system.

A fixed and prescribed school curriculum appears to be a necessary evil. We can develop concepts and solve problems within the prescribed topics as well as other areas. Although I know I must cover chapters 1-26 in Latin 1, there is no limit on the concepts or problems within the area. Our only reason for learning to decline a third declension adjective is so we can use that knowledge in solving a problem in translation.

Community, newspapers and national radio and TV programs demand much of our present school curriculum. I'll give credit to individual teachers who can and do interpret their course materials in light of concepts to be learned.

A curriculum council made up of teachers and administrators meets regularly to overview the program. A philosophy committee is also organized to recommend proposed changes that seem in the best interest of the school children.

Summary of Practices and Comments

The practices mentioned deal with the use of the core curriculum, employing broad preplanned problem areas, the provision of experiences to students in which they do the integrating; the maintenance of a vigilant standing curriculum committee; the maintenance of varied
instructional materials, and the organization of inservice education in which the problem is discussed in the presence of a competent consultant.

Teachers' comments cover a variety of angles. The teachers think that curriculum guides prescribe contents and not method, therefore ingenious teachers may devise effective approaches to deal with the prescribed content. Teachers could emphasize the development of meaningful concepts. Courses of study, however prescribed, should be used by master teachers as guides not as laws. The development of courses of study in which emphasis is placed on concepts rather on factual information is found helpful. The comments also seem to indicate that the existence of such a situation, and the complacency of teachers is due to the lack of well qualified teachers.

Obstacle 15: Lack adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students.

Practices identified from the questionnaire

1) Making one's own material as the occasion demands.

2) The creation, staffing and maintenance of a functional library.

3) The utilization of the community as a resource.
(4) The creation of a committee or committees in various departmental areas to develop instructional materials.

(5) The careful and critical use of a multitude inexpensive and free materials.

Comments

Ingenious teachers do not need formal materials to succeed in the teaching of critical thinking. The instructional materials exist primarily in the minds of the students and teachers.

Other materials can be garnered by the resourceful teacher (newspaper clippings, ditto materials, etc.) Literature provides materials; even grammar can be utilized. The important thing is for the teacher to challenge the students. Discussions, arguments, debates, must be held, but they must be followed up by a thorough analysis—an analysis that unfailingly manifests the thinking processes, both the incorrect and the correct.

Since reflective thinking implies the scientific approach, varied materials and techniques are needed. The resourcefulness of the teacher is helpful to supplement prepared materials of a laboratory nature.

There is a lack of such materials. However, a good teacher and a good class will arrive at reflective thinking whatever materials they have at hand.

Any material will probably serve very well if handled with sufficient insight.

I am sure, to be successful these materials must be worked out individually by the teacher using them.

Improvising is the key—'necessity is the mother of invention.'
There are too little primary source materials available in the average high school.

This calls for special skills and talents to be possessed by the teacher. Many of these the teacher can evolve with his children through community resources.

With modern means of communication—newspapers, magazines, radio, television—there should be no lack of adequate materials.

I have found it difficult to find materials for developing reflective thinking. Everyday activities should be used instead of isolated situations anyway. A teacher must at times search for his own material.

There are enough free and inexpensive materials using different points of view on the same subject—that can be secured if a teacher is sufficiently initiated to do so and is dedicated to the promotion of reflective thinking.

In this big wide wonderful, problematic world there is no lack of instructional material. It is all about us in a grain of pepper, a four leaf clover, a television set, the president's latest speech, sputnik, etc.

Summary of Practices and Comments

The practices stated are restricted to preparing one's own instructional materials, and utilizing the multiple instructional materials available in school, community and elsewhere.

The comments emphasize that there are many and varied instructional materials all about us, it is up to teachers to use them; and that ingenious and resourceful teachers can devise ways of using them, for it
is in the way of using the materials that the greater lack is manifested.

Data from Visitations

The interviews with teachers and principals all affirm that there is a paucity of instructional materials appropriate to the intellectual level of students and that the courageous effort of the teachers to sit down and produce is the healthiest possible solution.

In spite of such a realization the extensive use of conventional textbooks is prevalent. In many schools teachers prepared outlines in problem forms or questions and handed them to students. When questioned about the reason why, they replied that it minimizes students' tendency to memorize and maximizes their effort to look into more than one textbook.

The following types of instructional materials were found extensively used in one school:
1) Guide to clear thinking.
2) Unit on clear thinking.
3) Several materials developed by teachers in different departments.

A brief description of each is given below. The "Guide to clear Thinking" was prepared by a college of education staff and attempts to help students in:
1) Learning the game of thinking.
2) Using language to think.
3) Telling whether or not a conclusion is reasonable.
4) Sizing up an argument.
5) Testing ideas about the past.
6) Making up our minds about opinions.
7) Guide your own thinking.1

The guide, in each of the sections, helps students to acquire words and expressions,

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understandings and important skills. This guide though found by teachers to be a little difficult was nevertheless thought to be very useful.

Teachers of English, for instance, used this guide quite extensively when dealing with distinction between statements of fact and statements of value, problems of definition, distinguishing an argument from a description, dealing with fallacies, questions of validity, reliability, etc.

The staff developed a twenty-three page unit on clear thinking which teachers could use in their social studies classes as the occasion arises. The unit deals with such facts in writing reports, inferences, indexing and dating, context, slanting, a brief history of mental disorders leading to serious prejudice, definitions: defining abstract terms, one word, many meaning; fallacies, and prejudice as substitute for opinion.

The unit, it was learned, was not to be taught as such, but rather was to be used as a guide in the ordinary classroom situation in which the items included in the unit arise. But teachers were in one way or another to cover the material.

Each department in cooperation with the project for the improvement of critical thinking staff developed instructional materials in the various fields of study. The following were made available to the writer in ditto form:

1. Project for the improvement of thinking; World History Materials.
2. Project for the improvement of thinking; United States History Materials.

2Evanston Township High School, Social Studies Department, Unit on Clear Thinking, Evanston, Illinois, (mimeograph).
These materials are presented in a series of problematic exercises. They give helpful references to students, and are organized in such a way that one or more exercises deal with a specific skill or attitude. An analysis of the general science, English, Problems, United States history, and the history materials reveals the following situation.

<table>
<thead>
<tr>
<th>Areas of skills to be developed</th>
<th>Number of exercises prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making observation, recognizing observation and making inferences</td>
<td>48</td>
</tr>
<tr>
<td>Sources of data</td>
<td>10</td>
</tr>
<tr>
<td>Problems of reliability</td>
<td>20</td>
</tr>
<tr>
<td>Levels of generalizations</td>
<td>28</td>
</tr>
<tr>
<td>Definition of terms</td>
<td>32</td>
</tr>
<tr>
<td>Facts and opinions</td>
<td>26</td>
</tr>
<tr>
<td>Facts and statements</td>
<td>7</td>
</tr>
<tr>
<td>Deductive method (syllogism)</td>
<td>12</td>
</tr>
<tr>
<td>Assumptions</td>
<td>51</td>
</tr>
<tr>
<td>Reasoning</td>
<td>30</td>
</tr>
<tr>
<td>The hypotheses</td>
<td>42</td>
</tr>
</tbody>
</table>
Areas of skills to be developed (contd) Number of exercises prepared.

<table>
<thead>
<tr>
<th>Area</th>
<th>Exercises Prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verification and explanation</td>
<td>15</td>
</tr>
<tr>
<td>Analyzing and validating argument</td>
<td>20</td>
</tr>
<tr>
<td>Stating valid conclusions</td>
<td>42</td>
</tr>
<tr>
<td>Cause-effect relationships</td>
<td>10</td>
</tr>
<tr>
<td>Getting information from graphs, tables</td>
<td>6</td>
</tr>
<tr>
<td>Making decisions</td>
<td>7</td>
</tr>
<tr>
<td>Recognition and treatment of fallacies</td>
<td>12</td>
</tr>
<tr>
<td>Stating a problem</td>
<td>26</td>
</tr>
<tr>
<td>Controls and experimental design</td>
<td>41</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>485</strong></td>
</tr>
</tbody>
</table>

An extensive number of exercises has been developed by teachers of this school in cooperation with members of the Project for the improvement of thinking staff along the major ability areas stated in Chapter VI.

Another school supplied a unit developed for the purpose of developing reflective thinking. It, like the one immediately mentioned above, presents exercises in gathering facts and information, distinction between primary and secondary sources, evaluating testimony of witnesses, qualifications of experts, distinction between statements of fact and statements of opinion, drawing conclusions from statistical data, fallacies in conclusions, and the like.

Summary of the Results from Visitation

The materials gathered seem to indicate conclusively that instructional materials in all fields of study can be developed if schools actively and courageously set out to undertake the task. Furthermore, teachers seem
to have preference for preparing exercises to develop specific skills, abilities and attitudes involved in reflective thinking.

The results seem to substantiate the practices mentioned from the questionnaire that the production of instructional materials should be undertaken by the staff of the various secondary schools.

Obstacle 16: Lack of adequate instruments for evaluating progress of students in learning to think reflectively.

Practices identified from the questionnaire

1. Using the few available standardized tests, such as Watson-Glaser, ACE or SRA, etc.
2. Using teacher constructed essay and objective tests.
3. Providing for teacher observations, teacher judgment, etc.
4. Interviewing parents, and friends.
5. Encouraging teachers to use constant self-evaluation by students.
6. Organizing workshops in which evaluation of critical thinking or reflective thinking is the topic of concern.
7. Observing oral expressions and correcting carefully themes or reports of students.
8. Constructing tests in collaboration with State Research Division or Colleges of Education or other organizations or corporations.
Comments

I made up some tests of my own, but I have not proof of their validity. I do not have any answers here.

I make my own tests to measure the ability of students to think. Pupils' progress in achievement and development measured by teacher-made test. This gives pupils a chance to express ideas, originality, good judgment and understanding of material taught.

There are already a good many instruments available which are less widely used than they ought to be. School systems need to work out some ways of local usefulness.

This is the problem of the social science researchers. I think we should use more of what has been developed at the various university and other sources.

I think the best instrument is a sensitive teacher who knows her students. If skill in reflective thinking is being developed you can hardly miss seeing it demonstrated in some actual behavioral manifestations. The problem to me is rather how to develop teachers who can stimulate such thinking.

According to the standardized tests with which I am familiar, we do not test what we often hope to teach. Even the word "standardized" is a misnomer, because many areas have done away with standards—you know, take them from where you find them to where you can take them." None of the tests I have seen test reflective thinking. The teacher, therefore, must construct class tests that draw out of students their best thinking. These tests will be the essay type, and time becomes a factor.
There is a lack of tests for evaluating progress in reflective thinking. However, the old fashioned essay questions can be used at any time and they do promote reflective thinking.

It is extremely difficult to grade a person's ability to think reflectively. It is a most subjective evaluation.

Wherever this problem exists, the teacher must sacrifice to obtain such evaluative criteria as will be helpful to him under these deplorable circumstances.

Tests that show progress in reflective thinking should be tests that show attitudes and opinions, rather than knowledge of facts. We need more standardized tests of this nature.

The best instrument I have found is self-evaluation. Also, one student frequently evaluates the ideas and opinions and the methods used in acquiring those employed by another student.

Confront the students with thought provoking problems in the subject area at the beginning of a term. Present the same problems at the end of the term. Compare and judge the answers for progress in thinking. Note encouraging gains and work out scales for weighing.

Summary of Practices and Comments

The practices seem to be restricted to using effectively the few available instruments and constructing and using subjective devices which are adapted to particular situations. Comments also express the view that teacher-made tests are helpful.
Data from Visitations

In his visits the writer was able to secure samples of the kinds of tests, both standardized and teacher-made which were in use. The following is a brief description of the instruments.

The essay type of question was used by all teachers who specifically wanted to appraise progress in reflective thinking. A teacher of history gave the following question:

If you had been a congressman after the war between the states what would have been your plan for reconstruction?

Another teacher gave the following kind of question:

While looking over a magazine Jim read the following advertisements: Reward yourself with the pleasures of smooth smoking. __________ gives you a rich reward in smoking pleasure and extra measure of cigarette goodness. Relax. Take it easy. Smoke ___________. Cooler, sweeter, milder ___________ gives you a smoothness, mildness and satisfaction no other cigarette can offer you. Reward yourself! Get fresh new smoking satisfaction!

Jim had never smoked. He was impressed by these statements and decided he would "reward himself" with ___________, cigarettes. Before following this inclination, however, he decided to talk with his father who asked him if he really believed the claims made for ___________. As Jim thought about it he realized that the argument in the advertisement was making use of a number of assumptions which he had at first overlooked. What are these assumptions? List those which occur to you below.

In another school, a teacher of "Problems of Democracy" gave the following statement for discussion in an essay form.
Russian Communism insists that the laboring classes are the only producers of wealth. It says that the capitalist systems oppress labour. Discuss this statement using knowledge gained from your readings.

These kinds of situations are thought to be effective in appraising students' progress in reflective thinking in spite of their subjective nature. Students, it is claimed, get a chance to write, to organize their material, to make a strong logical case for this point of view, and to be clear and forceful in communication. These values would not likely accrue from objective tests.

Many schools give objective type of questions, however, with special emphasis on the multiple choice type. Examples taken at random from English, social studies and science are reproduced below verbatim.

Directions: Below are five underlined statements. Assume each is true. Under each is a set of numbered statements. Mark your answer sheet blank as follows:

V, if the statement can validly be drawn from the underlined statement.
I, if the statement cannot validly be drawn from the underlined statement.

If a noun is in the possessive case, it ends with an "s".

(1) If a noun ends with an "s," it is in the possessive case.
(2) If a noun does not end in "s," it is not in the possessive case.
(3) Any noun that is not in the possessive will not end with an "s".
Directions. In the answer sheet blank, mark the items as follows:
A. If the item is an example of a satisfactory real definition.
B. If it is an example of an unsatisfactory real definition.

1. She thought a sonnet was some kind of a bird. I told her it was a lyric poem of fourteen line, highly arbitrary in form, and following one or another several set rhyme conventions. She agreed that she had never seen a bird like that.
2. "Of course I know what an infinitive is, it is a verbal."
3. I never understood what an adjective was until someone told me it was a modifier.
4. The teacher asked if I could identify Silas Marner. I told her he was a literary character.

Social Studies

Directions. Each lettered selection A through M below, contains an argument with reasons and a conclusion. After each lettered selection there are three numbered statements. In the corresponding answer sheet blank, mark each numbered statement as follows: R, if the statement is a reason, C, if the statement is a conclusion, N, if the statement is neither a reason nor a conclusion.

If we are to gain the friendship of people in backward countries, we must send them materials that help raise their standard of living, and not send just weapons. Our policy is to win the friendship of these peoples. Our policy thus calls for shipments of materials like tractors and machine tools, the items that aid in raising living standards.

14. Our policy is to win the friendship of these people.
15. Our policy thus calls for shipment of materials like tractors and machine tools, items that aid in raising living standards.

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3Evanston Township High School, Midyear Critical Thinking Test: English, Evanston, Illinois. (mimeographed)
16. We should not send tractors and machine tools, but should send them weapons.

**Directions.** Select the one assumption that would make the argument valid. In the corresponding answer sheet blank, mark the letter of the statement which is the correct assumption.

In the last election the Republicans did not get enough seats to control congress, so they were not entitled to organize the Congress.

a) A party which does not get enough seats to control congress is not entitled to organize it.
b) The party which wins the most seats is entitled to organize congress.
c) The party which gets enough seats to control congress is entitled to organize it.

**Science**

**Directions.** When scientists set out to test hypotheses, they make predictions from them. Here is a hypothesis that a scientist sets out to test: "photosynthesis cannot occur without sunlight." Mark each statement as follows: A, if it is a prediction that a good scientist might use to help him test the hypothesis. B, if it is not a prediction that a good scientist might use to help him test the hypothesis. C, if there is no way to tell.

28. If photosynthesis does not occur then no starch will be produced.
29. If there is not sunlight there will be no photosynthesis.
30. If an alfalfa plant is kept in a dark cellar for two days and the iodine test is applied to the leaves, a blue color will not be produced.
31. If an alfalfa plant is growing in an open field in the summer and is exposed to direct sunlight most of each day, the iodine test on one of the top leaves will produce a blue color.

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4Evanston Township High school, Ibid.
32. If the iodine test on the leaves of a bean plant shows "blue" 12 hours after a previous test had shown "no blue," and if not starch has been added to the plant, then the plant has been exposed to the sunlight during the 12-hour period.5

Besides these teacher-made tests, schools use some of the standardized tests in reflective thinking. The three that were often mentioned by teachers and found used in many classrooms were Watson-Glaser, Critical Thinking Appraisal, American Council on Education, A Text of Critical Thinking, and Michigan State College Board of Examiners, A Text of Problem-Solving, High School Education.

Summary of Visitations

Teachers use the essay type of question for appraising progress in reflective thinking. They also use a variety of other teacher-make objective tests of the multiple-response variety, and a few of the standardized tests. Teachers feel that teacher ingenuity in each classroom situation is much more important than the production of many standardized tests.

The next chapter will continue the analysis of the data, dealing specifically with practices of teachers in overcoming obstacles pertaining to the community, and other miscellaneous influences.

CHAPTER IX

SPECIFIC PRACTICES OF TEACHERS IN OVERCOMING

OBSTACLES PERTAINING TO COMMUNITY AND

MISCELLANEOUS INFLUENCES

The practices identified in overcoming obstacles pertaining to the community and miscellaneous influences will be reported in this section.

Obstacle 17: The presence of "shunned or closed" areas of inquiry in the school and the community (e.g., sex, communism, race problems).

Practices identified from the questionnaire:

(1) Organizing debates among the students on such topics.

(2) Inviting outside speakers to speak on such topics.

(3) Organizing discussion groups with parents to consider the issues involved in these areas.

(4) Surveying community feelings carefully before attacking a topic.

(5) Advocating the establishment of a policy by the board of education for dealing with controversial issues.

(6) Incorporating the discussion of these topics in Biology, Problems of Democracy, "Getting along with others," a unit on family problems.

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Comments

I believe that social evolution has to be a very gradual process of education of all lay peoples. Many of the problems concerning sex, communism, race are being discussed in our classrooms in courses such as health, problems of democracy.

Any area of inquiry will probably serve very well, if handled with insight.

This seems to be the task of community relationships and community education through school leadership.

Parents and educators are taking a broader view of such matters than they did even a few years ago. They feel that these problems are to be faced honestly and realistically under the guidance of competent persons.

Bring these out into the open and discuss and study them from an adult, mature point of view.

PTA groups often incite school officials into a consideration of such areas. Community feelings on such topics require careful survey and may be handled not as school subjects entirely but as interest areas for community centers.

The answer to this question may be misinterpreted. Schools, public schools cannot have a "hog wild" attitude that any area of inquiry is open ground. Some teachers may not be trained in presenting controversial topics. If the tone of the community is decidedly of one mind on some issue, it would be ill-advised to barge into a question loaded with heat and emotion. I would question the validity of this question, especially applied to secondary schools.

Within the limits of good taste, I never discourage discussion of these subjects if they have some connection with the literature we are studying.
Discussion groups with parent: showing parents films and materials and briefing them so that they can discuss problems with their children.

This requires much tact and subtlety. Bringing issues in terms of student (not teacher) feeling and logic. Use field trips, and invite guests to speak.

In some communities certain areas of individual thought are strictly taboo. There is little opportunity to have unbiased study of religion, race problems, comparative government.

I've shown films on the reproductive system to a P.T.A. group and received their sanction for showing it to my classes. Here again it is a matter of the careful handling of the issues by a skilled teacher. I have dealt with all these of the "e.g." in a highly conservative community with only minor repercussions. One has to have the intelligent courage of one's convictions.

There is only one safe way of handling this problem—have a stock answer such as "I just don't know, ask your father, ask your minister, etc."

Summary of Practices and Comments

The practices identified in the questionnaire are rather few in number and deal with the setting up of a policy dealing with controversial issues. Studying the community to determine the prevalence of these attitudes and the incorporating of such controversial issues in other subjects, such as in biology or social studies.

The comments seem to show that present day conditions have improved and that more and more freedom is
given to teachers to discuss such controversial issues. They also indicate that the education of parents and the community is important. Other comments indicate that many teachers are insensitive to the existence of closed areas of inquiry.

Data from Visitations

The suggested procedures used in overcoming this obstacle were dependent in a large measure upon the administrators' planning, teachers' stand and the school's relationship with the community.

Many of the principals and administrative assistants stated that boards of education in consultation with the teaching staff should set up a policy dealing with controversial issues. But in all cases a firm stand on the part of the teaching staff is needed. In fact, if there is a sharp division among the staff, it is a point of excuse used by many lay people to perpetuate situations as they were.

Many principals and teachers also advocated that the community needs to be educated through P.T.A. meetings, radio, TV, public forums, and evening adult classes, which the leadership of the teaching profession. The elimination of such "closed areas" could effectively be undertaken if the situation is attacked cooperatively with teachers, administrators and the lay public.

One school reports the following procedures used successfully in introducing a course in "Successful Living" in which problems touching sex, and minority race problems were emphasized.
The administration held a meeting with selected key teachers who would be involved if this were to be taught in the school. Following this initial meeting a large staff meeting was held to discuss the possibility of introducing a discussion of such a controversial nature in the social studies and biology classes; the advantages of offering it; problems to be confronted, and the like. Following a general agreement by the staff, key community leaders from different walks of life, e.g., ministers, doctors, lawyers, real estate people, parent-teacher representatives, were contacted and individual conferences held. Finally a general meeting of the staff and the key leaders was organized. A letter was written to parents explaining the nature of the course, the reasons why such a course should be given, and requesting them to attend a general meeting to be held specifically for a discussion of the new course.

Movies were shown, discussions undertaken, a question and answer period organized. The course was then introduced in grades seven and eleven.

The three schools that successfully introduced the discussion of most controversial issues emphasized that the key had been unity among the staff, leadership of the administration and the gradual involvement of the community.

Summary of Visitations

The interviews with teachers and administrators seem to indicate that the setting of a policy dealing with controversial issues, the slow positive cooperative attack by administration and staff to involve parents have resulted in satisfactorily eliminating the presence of "closed areas" from classrooms.
Obstacle 18: Lack of family and community understanding of the values and contributions of reflective thinking.

Practices identified from the questionnaire

(1) The re-education of the public through:
(a) holding individual parent conferences,
(b) conducting discussion groups with parents and P.T.A. groups, etc. (c) using radio, TV, magazines, periodicals and local newspapers including the school newspapers, (d) exhibiting students' work to the public annually or semi-annually.

(2) Steadily and consciously working with the present student group who will form the new community.

(3) Re-education of parents indirectly through discussions with their children.

Comments

Teachers must somehow bridge this gap through contributing more generously of their talents in the classrooms and through the kinds of learning activities within the school. Extracurricular activities, as the student government, social and academic clubs, may supplement the classroom experiences.

Since the root of this problem lies outside the classroom, the classroom teacher has a difficult problem here. If, however, every teacher would attempt to create a culture in class whenever possible, some gain might be made.

Start with the youth anticipating that later generations who have been guided in thinking reflectively will form the new community that understands such values.

Through the discussions in classes we reach the families and community when the children take ideas home.
I wish I knew. The only opportunity I have as an individual is during conferences with my students' parents in which I explain the need for encouraging reflective thinking for my students.

Unfortunately to project a generalization, if a student is receiving A's or B's or even making a passing mark and if the football or basketball team is winning the family and the community seem little interested or disturbed about what is going on in the classroom.

Summary of Practices and Comments

This obstacle to be overcome involves the direct education of parents and the community through varied sources, and the indirect education of parents through the direct education of their children.

Data from Visitation

This item is indeed considered an important obstacle and there is a divided opinion on it in the schools. Some schools seem to think that society is outside of the jurisdiction of the school and there is nothing significant that teachers can do except to teach students in the classroom. Others feel that it has been so, precisely because nobody dealt with it effectively. Therefore, the teaching profession should extend its leadership and render service to society by educating the community.

Parent-teacher associations are considered to be successful places to begin such an education. Lectures, discussions, debates could systematically be organized on the importance and contribution of reflective thinking to society and to the individual.
There seems to be unanimous agreement here that the family's and community's lack of understanding is an obstacle and that the effective remedy is the systematic education of the community. The means to be used vary from community to community. But in all cases the establishment of good school-community relations is a sound beginning.

In this respect the results from the visitation are similar to the practices and comments given in the questionnaire.

Obstacle 19: The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas, and institutions.

Practices identified from the questionnaire

There is a strong realization that this item is an obstacle but in regard to possible activities to overcome it teachers shied away from making suggestions. Nevertheless the following were mentioned by a few teachers.

(1) Hold school-parent meetings: group discussions.

(2) Reeducate the public through varieties of the mass media.

(3) Encourage inter-group community meetings.

(4) Direct discussion in classes about varieties of these concepts or biases, e.g. utilize proverbs, familiar statements, such as "look before your leap" v.s. "he who hesitates is lost."

(5) Work in cooperation with civic and welfare agencies.

(6) Practice tolerance right in the classroom.

(7) Institute a strong, carefully planned Adult Education Program.
Comments

I have never felt impelled to attack the traditions, creeds, ideas and institutions of the family and community. I want to keep my job.

I try, by discussing and comparing the beliefs of the people whose languages we study, to develop an open-minded attitude as regards religious beliefs and ideas.

The teacher must exert as much influence here as permitted by his office to eradicate these by developing well organized thought in processes, and through appreciable guidance. The teacher can help develop desirable appreciations and attitudes. Education should first attempt to train persons in knowledge of mental and emotional processes before attempting to change beliefs.

This is certainly a major obstacle. To what extent a school can teach or should teach about these conditions is doubtful. Perhaps an early exposure to different and other views different from one's own may be of help.

Summary of Practices and Comments

It is difficult to give concrete and successful practices in overcoming this obstacle. Teachers seem to be hesitant to approach it directly. Furthermore, because of its involved nature it was thought difficult by teachers to observe easily when this obstacle has been overcome as a result of certain practices. However, the education of parents and the community with the view of developing a tolerant attitude is mentioned, as worth attempting.
Obstacle 20: Reliance of people upon dogmas or absolute ideologies (e.g., philosophical religious).

Practices identified from the questionnaire

This is a very serious problem and a very delicate one to handle. To the extent that schools develop the idea of questioning minds, of critical outlook, and the like, they are helping students, though indirectly, to put to critical examination their beliefs whenever they may be. In addition teachers:

(1) Use individual and group conferences and discussions with parents, community leaders, and others.

(2) Take any opportunity to point out that different religious and philosophical positions exist side by side, and that is tolerated in a democracy.

(3) (a) Strive to create an awareness that many beliefs exist in our community, (b) Strive to create an understanding that the exercise of freedom is effected when there is the opportunity of effective choice, and that this choice must be made by each individual citizen after careful weighing and analyzing.

Comments

By reading articles and personal experiences written by people who have thought deeply about philosophical and religious subjects and who express opposite sides of a question: for example, Apologia pro Vita Sua.

I have found that those students who come from homes where there are beliefs—definite beliefs—are the very students who respond when material that is the subject of this paper is presented. I am convinced that there is widespread misunderstanding on such words as "dogma" and "absolute ideologies."
Questioning for questioning sake alone can be dangerous. This item should be restricted to most advanced groups only.

Teaching pupils that propositions which seem "self-evident" may merely look convincing because they are so familiar.

Nowhere in this wide world are there more religious and philosophical dogmas and ideologies discussed and debated.

Our communication system provides us with comparative information. We can choose our own thoughts and desires providing we respect those of our neighbors—this we call democracy.

I think this reliance inhibits reflective thinking, for it replaces it by authority and by faith (i.e., source of belief not based upon objective criteria nor capable of direct communication).

Discuss with students the right of people to hold to their own dogmas while respecting others' right to differ.

The answer to this question is much too difficult to determine. How would a teacher know if people have overcome prejudices, creeds, religious ideologies. There are no statistics on anything like this. So much of the response is based on subjective judgment.

Where pupils' philosophy or religious ideology differ from each other it is possible to cultivate tolerance of other points of view. It tends to level out the hills and fill up the valleys to a high plane of kindliness.

It is a serious obstacle, but it seems to me to be an area outside the province of the secondary schools.
I have encountered many times possible conflict in a student or students between religion and reflective thinking. Then I simply declared that religion was a matter of individual faith, since I don't feel qualified to reconcile religion and reflective thinking. Then I simply declared that religion was a matter of individual faith, since I don't feel qualified to reconcile religion and reflective thinking for adolescents.

Summary of Practices and Comments

This item, like the one immediately preceding, it was thought to be dealt with indirectly by discussing the existence of several beliefs and ideologies, and by emphasizing that the existence of alternate choices as a desirable condition for individuals to make an intelligent choice. But as it is a rather touchy and delicate item, not much of the direct approach suggested for dealing with other obstacles was mentioned here. However, it was considered an obstacle.

Data from Visitation

Teachers thought that the indirect approach is much more effective and most likely to bring little or no criticism from parents. As it is difficult and at times impractical to deal with parents, they stated that dealing with the students themselves is sufficient and often most difficult.

An English teacher said that literature is so rich with different and conflicting views that it is the responsibility of teachers to acquaint students with these different literary works. Thus he said, we read in class novels written by American, European or Asiatic authors. For instance, he mentioned
that he assigns readings on Islam, Hinduism, Buddhism, etc., in addition to the conventional orthodox church to which students belong. Thus he says, we read and discuss works by Albert Camus, Jean Paul Sartre and Herman Hess, as well as others.

In another school, a discussion of authority, what it is, how strict to adhere to it, how to overcome it, if it becomes domineering in one's life, took place. Students raised such questions as: Why should we do what others tell us to do? Are we not chessmen moved about by priests, parents, teachers? The teacher skillfully guided the discussion leading to further inquiry and investigation of different points of view on the same question—in this case religion. As a guide three alternative hypotheses were formulated.

1. We do things because of fear that if we don't do them parents, teachers, will punish us.

2. We follow the authorities of other people because we have faith in them because of their age and wider experience.

3. We follow an authority because of the intensive study that authority did and our scrutiny of its validity.

The class was then to investigate each of these alternatives.

Another teacher reported the following successful practice in his classroom. After sensing the situation of prejudice on the basis of color and religion, he took advantage of a newspaper report in which a Jew was discriminated against. Three students were selected to study and read on "what is a Jew?" These students gave their report to the class and a large discussion followed the report. The next day one of the students reported to the teacher that he heard an important man in his house last night saying "negroes are never clean anyway." The
teacher took advantage of this. He posted a number of newspaper clippings of the Little Rock, Arkansas situation on the bulletin board. The next three days he reports that many of the students came up asking him questions. Then he asked whether the class wanted to study a unit on "Segregation." The class accepted his suggestion and the next two weeks were spent on the unit. The unit culminated by a class discussion in which students voted for or against, and in a class of thirty-two, thirty voted against, and two for.

This teacher strongly believes that in questions such as these the handling of the discussion by the students in which the teacher merely acts as a counselor is very successful.

In another school a teacher of social studies and another of English cooperated in introducing a unit on prejudice in general.

The teacher of the social studies decided that the unit "Getting along with People who Differ," was an excellent opportunity. The unit has many subdivisions such as (a) all of us are members of several kinds of groups, (b) Americans have many values and practices in common, (c) irrational behavior makes for intergroup conflict, (d) understanding and empathy diminish prejudice, (3) respect for those who differ shows social maturity.

These sub-groups gave students the opportunity to discuss problems of race, creed and nationality prejudices. In class discussion the following guides were followed: a) What do we know about the problem? b) What do we not know? c) What would we like to know? d) What should we know before drawing conclusions supporting a suggestion?

The teacher concluded from the study of his unit that students seem to be more tolerant in their views as judged by their comments, questions, writings and activities inside as well as outside of school.
While such a discussion was going on by the social studies teacher, the English teacher was teaching Mary Antin's "First Impressions of the Promised Land." The study of this story lead the class to discuss such topics as: Why did the family leave Russia? What differences did the family meet as regards Jew prejudice? What contributions did the Jew make to American life? When the reading and discussion were over, students were requested to write on the contributions different immigrant groups have made to improve conditions of life in America.

In another school a teacher taught a unit on "Developing a Philosophy of Life." This unit had four subdivisions, namely, (a) religion provides our moral and spiritual values, (b) truth must be sought and used for our good, (c) freedom is our most cherished possession, (d) mutual respect provides the only real security.

Summary from Visitation

These illustrations indicate that teachers are dealing with those two obstacles at the classroom level. The illustrations do not give any indication on the activities undertaken, if any, at the family and community levels. Cooperative effort between teachers was undertaken at the same time. The direct involvement of students was thought to be very successful.

Obstacle 21: The prevailing use of extensive propaganda in the community (e.g., through mass media).

Practices identified from the questionnaire

Widespread use of propaganda in the community was regarded by many teachers as a blessing rather than a curse, for the teacher then has
a ready made, living situation in which to hold discussions and develop critical mindedness in the students. But if students are not provided with such opportunities for evaluation they become prey to propaganda and followers of the mass.

(1) A systematic, consistent study of propaganda methods and techniques, especially in social-studies classes.

(2) The critical analysis of various mass media, e.g. advertisements, radio, TV, movies, etc., with reference to their assumptions and validity.

(3) A comparative study of the news coverage dealing with similar topics by three or more radio stations.

(4) The tape recording of the news coverage from different announcers for class listening and holding a discussion afterwards.

(5) The invitation of representatives of labor, and industry or other groups from the community to present their views on a controversial problem at a school assembly or classroom situation. Follow this by further investigation by students and have students debate the question at issue at an assembly or classroom.

Comments

The lack of good newspapers in ______ may to some extent be offset by bringing in others from other parts of the country and using varied magazines. The study of books on propaganda, of which they are many, or use of propaganda in advertising, politics, religion, business and labor, etc. The mass media may be used for self-exposure. Use the many books, studies and pamphlets of mass culture as they relate and apply to such a topic.
This is a problem. Teachers need to tackle it unfailingly. The student needs help in developing power and habit of evaluation. The teacher can help the student to create interest, arouse interest and equip him with the powers to handle when such situations arise.

Propaganda can be white, black or grey. It may be used for as well as against. The use of many types and degrees of propaganda can be helped in obtaining information necessary for reflective thinking or problem solving.

T.V. is extensively used, however, we use this in our discussions of thinking rather than just condemning it. Students are quick to see the fallacies of false advertising. Often they bring it to your attention first. Teachers just need to kindle the fire.

This sort of thing, when it happens, is the grist for our discussion mill in the realm of argumentative and expository writing—particularly through the research paper, debates and discussion.

What a made-to-order opportunity for developing reflective thinking!

I use and many of my colleagues do, extensive propaganda, advertisements or T.V to illustrate how people think poorly. Advertisers show a beautiful woman using a certain lipstick. Many people tend to assume that if I use such a lipstick I will be a beautiful woman. Everyday examples are full with such sorts of situations which teachers can use to an advantage.

The class method is to examine various advertisements, editorials, etc. subject these to a critical examination. Students list the questions which have not been included in the propaganda. TV advertisements are also subject to scrutiny.
Different news stories on the same subject are compared as to facts.

Summary of Practices and Comments

Both the practices and the comments are in agreement that the most effective way to deal with propaganda is to subject it directly to classroom discussion.

Data from Visitation

The data from the visitations strongly confirm the practices mentioned in the questionnaire. English teachers, social studies teachers and geometry teachers unequivocally state that the utilizing of propaganda material, in whatever form it may appear as classroom instructional material, is the best approach to deal with the situation. Teachers further stated that acquainting students with the tactics used by propagandists, as well as letting them discover these techniques, have proved extremely successful.

Obstacle 22: Anxiety on part of community, family, and teachers which leads individuals to seek for final solutions of problems of deep concern to them, rather than an attitude of open inquiry.

Practices identified from the questionnaire

(1) The establishment of a climate of security in school.

(2) The consistent disposition and exemplification of teachers in their everyday dealings with students and others.

(3) Incidental, yet not accidental, pointing out of man's inability to-date, to know and understand nature with absolute certainty, and the theory of probability which is the basis of scientific prediction.
(4) Individual and group guidance by teachers and counselors.

(5) The provision of concrete exemplification by teachers in pointing out: (a) that differences in time should change ideas and beliefs, (b) that very few sources can be classified as revered authority, (c) that parents, teachers, ministers, etc. can sometimes be wrong.

Comments

This involves establishing a climate of security in school atmosphere.

Many of our concerns that promote anxiety; namely, the hydrogen bomb, the failure to launch the Vanguard, polio, rabies, cancer, etc. are not problems to which we as individuals can find a ready and final answer. There are situations to be met with inquiry, research, and patience.

This is a human problem not solvable by techniques and practices. The constant example of the teacher is the best we can do—constant examination of the complexities of a situation, exposure to writers and speakers of a certain intellectual subtlety are helpful.

This is an age of anxiety, isn't it? I don't know how to develop completely an attitude of open inquiry. We talk about this attitude but I know that when a person is pushed into a corner, he really wants a solution.

This search for final solutions still has me stymied. If I could accept a state of incompleteness I might resume my struggle for an advanced degree in physics.

The desire for solutions is very, very, very deep rooted. It requires a whole cultural reorientation.
Again, how can a teacher know when someone has overcome anxiety about an abstract problem like this. If someone left the orthodox Baptist church and joined a Unitarian church, this would indicate a change of philosophical bias. But it is so very difficult to know what would cause such as change, and how would one know who did assuage such anxiety.

Summary of Practices and Comments

The practices reported are few in number. The establishment of security, the use of personal exemplification, and the explanation that the very science we cherish is based on probability are the major categories. The comments seem to confirm that it is an obstacle, and indicate that it is difficult to appraise whether a practice successfully overcomes it or not.

The visitations did not elicit any major practices. The only item that was elicited was a discussion on Robert W. Service's poem "The Spell of the Yukon, in which he writes,

Yes it isn't the gold that I am wanting,
So much as just finding the fold.

A fifteen minute discussion was devoted to this poem in which notions of suspended judgment, relativity, and tentativeness were discussed by the teacher and the students.
Obstacle 12: Overemphasis by teachers, school administrators and lay public on the transmission of the social heritage as a major purpose of education.

Comments

The only illustration that was provided is the "preparation of a discussion comprising the staff, administration, representative lay public," on the purpose of education in their community" and an investigation of what leaders in education say about the major purposes of education by a standing appointed committee. The remaining suggestions were all made in the form of comments as follows.

Each school system must set up some group discussion about the role of the school the aims of education and the objectives of different areas of the curriculum.

I don't believe that our system has overemphasized this purpose of education with consequent injury to development of reflective thinking.

I feel that one of the major goals of education is the transmission of the social and political heritage.

What we need is to realize that social heritage can employ reflective thinking.

In many instances, the social heritage needs to be emphasized to the same degree that reflective thinking needs to be developed.

This is a policy question which should be decided by the lay public, in my view.
This heritage can be transmitted by means of reflective thinking, too. One cannot think reflectively in an intellectual vacuum, there must be something to think about. This is an alibi, not an obstacle.

The transmission of social heritage seems to me to be the end product, whatever the argument. I do feel that imparting social heritage, as unquestionably important as it is, can be arrived at incidentally. The stress, it would appear, should be on critical evaluation, judgment, etc., which will cause to occur this end.

I happen to believe that this transmission in a broad sense at least, is the major goal of publicly supported education, in a "free country, free community or free world"-- or in a totalitarian society, for that matter. Society pays the bills, the chief motive being to perpetuate itself.

If the social heritage is to be transmitted as is the tendency of social studies books, and much educational theory, and if students are not deemed ready to face the overwhelming crisis in civilization until late high school and college, there is little hope for cultural thought (in the best sense) to flourish. Planting a seed for thought here and there is the only recourse.

Summary of Comments

No significant practices were offered except the undertaking of a discussion on the purpose of education in the community in the perspective of the national community, of which local communities are integral parts.

Some teachers feel that this is a policy question which should be decided by higher policy-making bodies.
Others feel that the transmission of the social heritage has not been overemphasized. Other teachers think that reflective thinking in a democratic society is part of the social heritage and as such overemphasis on the transmission would accompany overemphasis on relative thinking, but that this does not occur. Teachers further seem to indicate that the healthy transmission of the social heritage takes place when the citizens deal intelligently with their problems.

Data from Visitations

Discussion with teachers and principals seem to indicate that the blind transmission of the social heritage without critical evaluation is not the purpose of education in their schools. They stated that the purpose of education is rather to equip students to live in a democratic society and contribute to it. They further unanimously supported the idea that the transmission of the social heritage is but a portion of the schools functions and responsibilities.

One school has the following objectives.

1. To gain the means of self and family security.
2. To satisfy the desires for personal growth.
3. To learn how to live with others.
4. To develop standards for ethical conduct and judgment.
5. To continue the quest for truth and knowledge.
6. To find appreciations of the better life.
7. To acquire vigorous mental and physical health.
8. To contribute to the growth of community and national culture.
Another school states that "since its inception" it has "endeavored to establish policies, select learning experiences, and utilize methods of teaching which are consistent with a democratic philosophy."\(^1\)

The staff which bases its school's objectives on the basis of the meaning attached to democracy includes the following three broad elements of its understanding of democracy.

1. Respect for human personality
2. Faith in living and working together for the common good.
3. Faith in the method of intelligence in all areas of living.\(^2\)

Still another school gives the following as its educational aims. It states:

The following statements represent the educational aims of Evanston Township High School. These educational aims are conceived as being part of a continuing process through and beyond formal education. This process should prepare a student, insofar as individual differences will permit, to make a positive contribution to our democratic society.

Specifically education provided at Evanston Township High School should enable the students:

1. To achieve command of the knowledge and skills basic to effective learning.
2. To develop and maintain good physical and mental health.
3. To understand the rights and obligations of citizenship and to perform diligently and competently these obligations as a member of local, state, national, and world communities.

\(^1\) The Philosophy and Purposes of the University School, The Ohio State University, Columbus, 1948, p. 3.
\(^2\) Ibid., pp. 3-4.
4. To understand and to use the problem-solving approach to life situations.

5. To develop those skills, understandings and socially sound attitudes that results in intelligent participation as producer and consumer in economic life.

6. To develop vocational and leisurc interests for personal satisfaction and social usefulness.

7. To develop the capacity for aesthetic appreciation.

8. To develop principles for personal and social conduct based upon moral and spiritual values.

9. To acquire the knowledge and attitudes basic to satisfying family life and other human relations.

All these objectives of the three high schools and similarly of the three others, all indicate that the purpose of the school is diversified, and that the development of reflective thinking is an important objective, indispensable to the preparation of students to live in a democratic society.

Obstacle 13: Intellectual dishonesty of school administrators who pay only verbal allegiance to the values of reflective thinking in the school program.

Comments

I believe most teachers are primarily autonomous in the classroom and are little affected by the 'intellectual dishonesty' of their administrators.

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Closer workings between teachers and administrators, regularly evaluating the school program; insistence by some "fearless" teachers that administrators become more thorough in their thinking and more vivid in their actions.

My administrator, I feel, desires to develop a good educational environment, but puts much stress on "making a record" for himself—which discourages a teaching from doing the "unorthodox."

I don't think they are dishonest. They just don't understand what reflective thinking is. Most of them seem to be ambitious people—seeking a worldly position. I think that people of this type usually don't develop the reflective process.

As intimated in a previous item, there is a good deal of misunderstanding, not dishonesty. A great majority will applaud a recitation of the Gettysburg address more than a meditation on a blade of grass; in fact some would even question the value of having a student spend his time in thinking about a blade of grass. I hope the recent publicity given to basic research in our press will correct such thinking on the part of the administrators concerned.

Intellectual dishonesty denotes a willful practice, this group (said without derogation) just knows as little of the subject as ordinary teacher and therefore pays as much verbal allegiance. Where reflective thinking is achieved by teachers it is done without either much encouragement or discouragement by administrators.

The words reflective (or critical) thinking would seem to mean less particularly to most administrators than some other values. Administrators seem to respect the wishes of the public. On the bright side the wishes of the public seem to be changing and there is much room for experiment within the present school situation.
School mores, community pressures, economic and civic values, constantly plague the school administrator, I believe every administrator who is honest with his own convictions will pay more than verbal allegiance to the above values.

Many administrators are concerned with reflective thinking...but the lack of tested materials and evaluation data of programs make them somewhat hesitant to move at full speed ahead. No administrator will stick his neck out until he can back up a program of study that has proved its worth and can be definitely linked up with the intellectual progress of the students.

The school administrators with whom I have come in contact have been too busy doing their job to give me any indication of the sincerity of their attitudes toward reflective thinking.

In many cases more critical and constructive state supervisors of public school teaching programs might not be out of place.

Summary of Comments

No significant practices were mentioned. Perhaps teachers' reluctance to give practices concerning this item might be due to the fact that the administration distributed and collected the questionnaires. The comments given however, seem to state that teachers are really autonomous in their classroom procedures and need not be bothered by the administration's stand; that the administrators also lack a knowledge of reflective thinking; often lack conviction on the values of reflective thinking; that for various reasons mostly
personal prestige, self-aggrandizement, administrators' stand on the situation is a real obstacle; and, that the establishment of close ties between teachers and administrators is conducive to improving the situation.

Data from visitation

The only two practices mentioned as being successful were the programming of inservice education either during summer or during school year through the action research approach; and the encouragement of inter-system visitations of administrators. It was stated that more than often administrators' visit of some other administrators known to be keenly interested in reflective thinking acts as a successful springboard.

General observations from the writer's visitations

While it is somewhat repetitious to summarize the findings from the questionnaire, it seems fitting to mention briefly certain general observations made by the writer in visiting the six secondary schools. These points are not, of course, definitive. They apply to all six of the secondary schools visited.

1. It was observed that the interest of the school administration in the development of reflective thinking was a key factor in creating awareness on the part of teachers.

2. That the more successful teachers were not necessarily those that have more extensive formal training but rather those teachers that have a real
interest and conviction in the values of reflective thinking.

3. Those interested teachers were not hampered by the lack of instructional materials and evaluative instruments, for they believe that the success of developing thinking often depends on giving a newer approach to the use of already existing materials.

4. All teachers expressed the fact that developing reflective thinking is a difficult and time-consuming task, and that they need more help from colleges of education which would give direct emphasis on thinking.

5. Eighteen of the twenty-five teachers interviewed each for at least forty minutes, mentioned that such an activity requires more time than is available at their disposal. But all stated that they continued to make thinking the center of their activity because they believe in it.

6. All agreed that teacher-education institutions in general except for a few individual teachers, did not help them to sharpen their thinking.
CHAPTER X
SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

This study investigated the major obstacles which secondary school teachers face in developing reflective thinking in students and the practices they currently use in overcoming them. Specifically, the investigation was designed (1) to identify the obstacles and (2) to identify the major practices used in overcoming these obstacles.

In an attempt to meet these two specific purposes, the following procedures were undertaken:

1. Analysis of the literature that deals with (a) the historical development of reflective thinking as an educational objective, (b) the current practices or the general procedures reported in the literature and, (c) the obstacles to the development of reflective thinking.

2. On the basis of the obstacles identified from the literature, a questionnaire was prepared and sent to leaders in education for validation and further identification purposes.

3. The final questionnaire was then developed on the basis of the responses of the leaders in education and submitted to forward-looking teachers for further
validation of the obstacles and identification of successful practices used by them in classroom situations.

4. In addition to these, six secondary schools were selected and visited by the investigator.

Conclusions of the Study

Assumptions validated

The analysis of the data obtained from the above sources seems to validate the four basic assumptions of the study that:

1. The development of reflective thinking is an important educational objective of the secondary schools.

2. Habits of reflective thinking can be improved significantly as a result of direct instruction.

3. There are important obstacles hindering the development of reflective thinking in the secondary school that can be identified by leaders in education and secondary school teachers, and

4. Successful practices in removing obstacles to reflective thinking used by teachers in schools can be identified by those who use them.

Summary of major obstacles identified

1. Twenty-five major areas of obstacles were identified.

2. These identified obstacles fall within the following three major categories:
(a) Obstacles arising in the classroom.  
(b) Obstacles pertaining to the secondary  
    school curriculum, institutions of higher  
    education and research.  
(c) Obstacles pertaining to community and  
    miscellaneous influences.  

3. Obstacles such as the lack of instruments to  
   appraise progress in reflective thinking; the unfami­  
   larity of students with logical fallacies; the problem  
   of language; the failure of teacher-education institu­  
   tions to prepare teachers and administrators who think  
   reflectively; the persistent use of conventional teaching  
   methods; lack of appropriate instructional materials;  
   and the lack of skill by teachers in guiding students  
   in the development of reflective thinking were rated by  
   teachers as being from "much" to "very much" as obstacles.  

4. Obstacles dealing with the lack of teacher,  
   family, and community understanding of reflective thinking;  
   the fixed and prescribed nature of the school curriculum;  
   the impact of dogmas, or absolute ideologies; the lack  
   of basic research on the nature of reflective thinking  
   at various developmental levels; and the lack of an  
   open-minded, inquiring attitude on the part of teachers  
   and the community, were rated by teachers as being from  
   "average" to "much" as obstacles.  

5. Obstacles dealing with the presence of closed  
   areas; teachers' lack of competency in subject matter of
instruction and lack of conviction in the values of reflective thinking; failure on the part of administrators to narrow the gap of belief and practice; paucity of students' experiences; presence of faulty theorizing about problem-solving processes; and the impact of propaganda were rated by teachers as obstacles that were of "little" to "average" importance.

6. Obstacles dealing with college pressures through entrance requirements; overemphasis on the transmission of the social heritage; and disagreement among educators on the applicability of reflective thinking were rated as somewhat higher than little as obstacles.

7. Although there were discrepancies between the composite ratings of leaders and teachers, there were close agreements on the seriousness of obstacles dealing with the inadequate preparation of teachers, their incompetence with regard to the development of reflective thinking, lack of adequate instructional materials, evaluative instruments, and the lack of family and community understanding of the values of reflective thinking.

8. The two areas of widest discrepancy between the two groups were in the inadequate handling of language and logical fallacies by students in both of which the
teachers' ratings were much higher than those of leaders.

Summary of major practices of teachers in overcoming obstacles arising in the classroom

1. The continuous furthering of teachers' competency to handle the situation was sought by means of various courses, discussions, projects, and devices, such as those planned within the particular school, the school system, higher institutions, and, most important of all, by individual teachers.

2. The areas of the courses that were frequently mentioned as being helpful were, general philosophy, logic, psychology, group dynamics, cultural anthropology, and semantics.

3. Direct training in methods of research and classroom applications of the process of reflective thinking in the various subjects of instruction were reported to be highly successful.

4. Direct involvement of teachers in conducting research at the classroom, school, or system level was suggested by many as highly desirable.

5. Other forms of teacher involvements favored were: conference with teachers, principals, supervisors or others; observation of successful classrooms dealing with the
same subject matter of instruction, classroom demonstrations, and membership in professional organizations.

6. More emphasis on the subject matter of instruction and less emphasis on methods courses were suggested at both the undergraduate and graduate levels.

7. The use of the discussion method, in which students are really involved during the planning, activity, and evaluation stages, was reported to be successful in developing thinking students.

8. While emphasizing that all teachers should be teachers of language, it was suggested that school should maintain a strong English department.

9. The systematic habit of teachers in building new vocabularies, of placing emphasis upon the use of accurate and precise language, and being concerned about correct grammatical usage were reported as practices successfully used. They called attention, also, to the importance of the careful correcting of students' writings and of watching oral expressions in and outside of classes. They thought free reading to be important, too.

10. Teachers need to identify carefully the major logical fallacies and point them out to students as the occasion arises. It was thought to be more effective to have the whole staff sensitive to the problem of
identifying logical fallacies than to expect one or two teachers to deal with it.

11. Direct instruction through specially prepared exercises dealing with the various logical fallacies was also suggested by many of the teachers interviewed.

12. With regard to enriching students' experiences, the use of field trips and excursions within community and outside the community, the use of audio-visual aids, encouraging students to see better films and listen to concerts and visit homes are among the main practices reported and endorsed.

13. The presence of an active and vigilant administration was considered a key to the success or failure in initiating and maintaining a program which emphasizes the development of thinking.

14. Among the most important activities of the administration, the following were the activities most frequently used and suggested: the provision of a healthy and reflective school climate, arranging teaching loads in such a way that teachers get some free time, the development and maintenance of a well-stocked professional library, and the development of helpful guides and other instructional materials and audio-visual aids.
Summary of major practices of teachers in overcoming obstacles pertaining to the secondary school curriculum, Institutions of higher education and research.

1. No type of curricular organization was mentioned as being superior to others in the development of reflective thinking, although the core, employing pre-planned problem areas, was looked upon with favor by some teachers.

2. As long as teachers make provision for integrating experiences in their classroom activities, the way the curriculum is organized was thought to be of little importance.

3. The preparation and provision of curriculum guides, stressing concepts to be developed, problems to be dealt with and questions to be answered, were thought to be far better than those courses of study which merely prescribe content to be covered.

4. Teachers indicated that there are many and various instructional materials. The problem for teachers is to devise ways to approach or use them in such a way that students profit from them. For this reason, the use of many testbooks, audio-visual aids, inexpensive materials and supplementary books was considered better than dependence upon a single textbook.

5. The development of instructional materials by teachers from time to time as the needs demand was considered effective.
6. The most effective and the most widely used evaluation instrument is the essay-type.

7. Other instruments used to appraise progress in reflective thinking include: observation, interviewing, student self-evaluation, oral examination, teacher-made objective tests, and standardized tests.

8. Concerning the disagreement of educators on the applicability of reflective thinking to certain problems of living, the serious investigation of these conflicts and the reaching of decisions by each school was given as the healthiest practice possible.

9. Teachers were of the opinion that teacher-education institutions should emphasize content more than they are doing at present.

10. The reorganization of the teacher-education curriculum and reconstruction of the methodology said to prevail in teacher-education institutions, so that independent thinkers rather than followers of a school's point of view would be produced, was emphasized.

11. With regard to college entrance requirements, the establishments of a strong counseling department, the undertaking of short workshops in which both college and secondary school administrators take part, and the use of private consultation of high school administrators
with college admission officers were the practices identified.

12. With regard to the lack of basic research and faulty theorizing, no significant practices were mentioned other than the confirmation that such situations are obstacles.

Summary of major practices of teachers in overcoming obstacles pertaining to community and miscellaneous influences

1. The development by the board of education, in consultation with the teaching staff, of broad policies dealing with controversial issues is advocated.

2. Teachers stated that most of the so-called "closed areas" could safely be handled cautiously and indirectly in biology courses, problems of democracy classes, and units in successful family living.

3. The development of a carefully planned adult education program in which the importance of reflective thinking and other problems could be explored, is thought to be profitable.

4. Audio-visual aids and other mass media to educate the family and community are effectively being utilized in some school systems and are said by many as being successful.
5. Teachers use a variety of subjects to acquaint students with problems of community pressures and subtle influences.

6. The most effective practice in dealing with propaganda is to subject it to direct classroom discussion, using the available propaganda as instructional material.

Implications for secondary schools

The results of this study, though neither overly specific nor comprehensive, have implications nevertheless, for secondary school. The major implications are:

1. If the development of reflective thinking is to be an important objective of secondary schools, it has to be dealt with by specifically providing the conditions under which thinking may occur in the classroom. And if this is to be accomplished effectively, if it is necessary that teachers understand what thinking is and how to arrange and maintain conditions that stimulate it. Administrators, moreover, must assume responsibility to provide the leadership that is necessary to initiate it.

2. The identification of obstacles in developing thinking is an important function of teachers, if the development is to take place effectively. It becomes the duty of schools, therefore, to be constantly vigilant in recognizing and eliminating, if possible, those negative
factors, destructive trends, and crystallized blocks that stand in the way of the development of reflective thinking.

3. The responsibility for the development of reflective thinking may not be given to one teacher, one subject, or one grade level but, rather to all teachers, all subject, and all grade levels at all times. This seems to imply that the curricular organization, the methodological approach, the evaluation system, the instructional materials, the administrative set up, and the like are all involved; hence, careful planning and study is needed on the part of the school's staff.

4. The successful initiation and development of a program emphasizing the development of reflective thinking depends on such factors as teacher-education institutions, community influences, and teachers' dispositions. The school cannot detach itself from the community, for community influences are potent and work positively or negatively in the initiation and maintenance of a program conducive to the development of reflective thinking.

Recommendations of the Study

Considering the limitations of the study, the implications stated above, and the major findings of the study, the following major activities are recommended:
1. In view of the fact that the item dealing with teacher education institutions received high rating both by leaders in education and teachers, and in view of the influence of institutions of higher education in in-service and workshop programs and research projects, it is recommended that teacher education authorities study the results and implications of the study with the possibility of evaluating the contribution of their program to the development of reflective thinking.

2. It is recommended that administrators and teachers consider the identification of obstacles to the development of reflective thinking which are potent in their community and school situations; and initiate the development of effective ways to overcome them as part of the major activities of the school. Moreover, since administrators hold leadership positions it is recommended that they take the lead in the creation of programs designed to achieve these ends.

3. In view of the fact that the practices identified in the study were said to be successful practices in classroom situations, it is recommended that both teachers and administrators desiring to initiate such a program, study the practices carefully.

4. Because of the paucity of specific studies in this field and the inconclusiveness of the result of
this study, it is further recommended that:

(a) another study of this nature, using a larger sampling and more refined checklists and interviewing techniques, be undertaken.

(b) Each or a combination of the obstacles identified be studied with greater thoroughness.

(c) a study be undertaken to find out whether or not there are certain obstacles to the teaching of reflective thinking which are characteristic of certain subjects, e.g., geography, history, mathematics, history, etc.

(d) more definitive criteria be developed to determine the extent to which an item is a serious obstacle and the extent to which specific practices used in dealing with them are more significant than others.
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APPENDIX
APPENDIX A

LIST OF LEADERS TO WHOM THE FIRST
CHECK LIST WAS SENT

1. Paul Klohr, Ohio State University
2. Glen Burch, The Fund for Adult Education.
3. Louise Antz, New York University.
4. H. C. Hand, University of Illinois.
5. Morris T. Kurt, Bureau of Curriculum Research, NYC.
8. C. E. Martz, Secretary-Treasurer of the Junior Town
   Meeting League.
11. B. S. Bloom, Chicago University.
12. Robert W. Kilbourn, Metropolitan Detroit Bureau of
    school studies.
13. C. R. Hicklin, University of Illinois.
15. James A. Hall, Superintendent.
16. K. B. Henderson, University of Illinois.
17. B. O. Smith, University of Illinois.
19. Ernest Bayles, University of Kansas.
21. R. W. Tyler, (Director, Center for Advanced Study in the Behavioral Sciences).

22. Kimbal Wiles, University of Florida.

23. David H. Russell, University of California, Berkely.


25. W. Brownell, University of California, Berkeley.

26. Miles E. Cary, University of Virginia, Extension Division.

27. Ross L. Mooney, Ohio State University.

28. Herman Frick, Florida State University.

29. J. W. Srightstone, Director, Bureau of Educational Research, N.Y.C.


31. Harold Fawcett, Ohio State University.

32. M. L. Strey, (Winthrop College, South Carolina College for Women).


34. Harold Rugg, (Woodstock, N. Y.).

35. Hilda Taba, San Francisco State College.

36. Robert J. Havighurst, Chicago University.


38. Herman Frick, Florida State University.

39. R. J. Henley, St. Louis University.


41. William Stanley, (University of Illinois).

42. H. Broudy, (State Teachers College, Framingham, Massachusetts).
43. Robert Ulich, (Harvard University, Massachusetts).
44. Oliver Martin, (University of Rhode Island).
46. Ernest Melby, (Michigan State University).
47. W. Brownell, (University of California, Berkley).
48. Lindley Stiles, (University of Wisconsin).
49. Keith Tyler, (Ohio State University).
50. Spencer Myers, (Sup. of Schools, Flint, Michigan).
APPENDIX B

CHECK LIST SENT TO LEADERS IN EDUCATION

Respondent's Name

A CHECKLIST OF THE OBSTACLES TO THE DEVELOPMENT OF REFLECTIVE THINKING IN SECONDARY SCHOOLS

In this investigation, obstacle means anything that is a deterrent to or an interference with the development of reflective thinking in the secondary school. The term reflective thinking is used synonymously with reflective thought. The following definition given by John Dewey in How We Think, p. 9, is used as the basis for the study:

The active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends ....

Please give your reaction to each of the statements of possible obstacles on the basis of your own experience and personal judgment and in terms of Dewey's definition of reflective thinking as stated above. Please check the column following each item which best expresses your judgment. The scale is interpreted as follows:
1. none or very little  4. much
2. little  5. very much
3. some or average

Space is provided under each item and at the end of the checklist for additional obstacles that you think ought to be included and for reacting to each on the five-point scale; or for comments you wish to make on any item, e. g. the phrasing, meaning, etc.
TO WHAT EXTENT DO YOU CONSIDER THE FOLLOWING TO BE OBSTACLES TO THE DEVELOPMENT OF REFLECTIVE THINKING IN SECONDARY SCHOOLS?

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<th>Obstacle</th>
<th>Very little</th>
<th>Little</th>
<th>Some</th>
<th>Average</th>
<th>Much</th>
<th>Very much</th>
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<td>1. Overemphasis by teachers and school authorities on the transmission of the social heritage as a major purpose of education</td>
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<td>2. Teachers' lack of understanding of reflective thinking and its role in individual and group behavior</td>
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<td>3. Teachers' lack of skill in guiding students in the development of reflective thinking</td>
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<td>4. Use by teachers of conventional, less time consuming methods of teaching (e.g. recitation, lecture) because of over loaded schedules</td>
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<td>5. Lack of adequate instruments for evaluating progress of students in learning to think reflectively</td>
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<td>6. Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students</td>
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<td>7. The fixed and prescribed nature of the school curriculum (e.g. courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved)</td>
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8. Students' use of faulty language expression or comprehension, and/or the lack of adequate vocabulary.....

9. Autocratic leadership of boards of education and school administrators.....

10. Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g. morals, religion, esthetics).

11. Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking in the school program ............

12. Temporary or chronic physical and mental health conditions of students..............

13. Students' emotions and feelings (e.g. wishes, desires, fears, self-interest, self-love) ....................

14. Teachers' emotions and feelings (e.g. wishes, desires, fears, self-interest, self-love) ....................

15. Students' disturbances and/or mental blocks ........

16. Teachers' disturbances and/or mental blocks ........
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<td>17. The prevailing use of extensive propaganda in the community (e.g. through mass media)</td>
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<td>18. Reliance of people upon dogmas or absolute ideologies (e.g. religious, philosophical)</td>
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<td>19. Lack of family and community respect for and understanding of the values and contributions of reflective thinking</td>
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<td>20. The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas, and institutions</td>
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<td>21. The presence of &quot;shunned or closed&quot; areas of inquiry in the school and the community (e.g. sex, communism, race problems)</td>
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<td>22. The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family</td>
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<td>23. Inability of students to deal with problems reflectively because of lack of native ability</td>
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<td>24. Inability of students to deal with problems reflectively because of immaturity</td>
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25. Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g. false analogy, overgeneralizations, wrong inferences) ................

ADDITIONAL OBSTACLES

26.

27.

28.

COMMENTS:
Dear

I am carrying on a study in the field of secondary education under the guidance of Professor Harold Alberty, Ohio State University. I am attempting to identify the major obstacles to the development of reflective thinking in the secondary school and to discover successful and promising practices used by forward-looking teachers and school systems in overcoming them.

The obstacles that are included in the questionnaire (see enclosed sample copy) grew out of an analysis of the literature that deals with this phase of the study. The initial formulation was sent to selected leaders in education to secure suggestions for improvement. In light of these suggestions the questionnaire was revised. For further validation of these obstacles in actual school and classroom situations, and for obtaining illustrations of promising and successful practices used by forward-looking teachers and administrators to overcome them, it becomes necessary to ask the cooperation of a few selected schools.

Since your school has been recommended to me as being among the forward-looking schools of the nation, I would like to solicit your assistance and cooperation in filling out one of these questionnaires if you have time, and in distributing them to selected staff members, who in your judgment have been especially successful in developing reflective thinking. If you are willing to cooperate, will you kindly fill in the enclosed self-addressed post card and mail it as soon as convenient.
Since the number of good schools is limited, I shall appreciate any assistance you may give me in completing my project.

Sincerely,

Aklilu Habte

AH: kb

Enclosures
APPENDIX D

CHECKLIST SENT TO TEACHERS

AN INVESTIGATION CONCERNING OBSTACLES TO THE DEVELOPMENT OF REFLECTIVE THINKING IN THE SECONDARY SCHOOL AND SUCCESSFUL AND PROMISING PRACTICES USED TO OVERCOME THEM

In this investigation, obstacle means anything that is a deterrent to or an interference with the development of reflective thinking in the secondary school. John Dewey's description of reflective thinking in How We Think is used as a working definition.

The active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends.....

PLEASE BASE YOUR REACTIONS ON WHAT YOU HAVE FOUND TO BE THE SITUATION FROM YOUR OWN EXPERIENCES AND PERSONAL JUDGMENT IN EDUCATIONAL PRACTICES.

a) To what extent do you consider each of the statements mentioned in this investigation an "obstacle" to the development of reflective thinking? Please circle the number following each item which best expresses your judgment. The scale is interpreted as follows:

1 very little or none  4 much
2 little  5 very much
3 some or average

b) For each of the obstacles that you feel you have been successful in overcoming, list and describe in the space provided (if the available space is not sufficient, use back of page) illustrations of your practices. Feel free to list and describe anything, i.e., approaches, techniques, methods, classroom atmosphere, teaching materials, audio-visual aids, classroom organization, questioning techniques, kinds of examination you give, workshops, group discussions, in-service training, action or other research activities, and so forth, that helped you to overcome each of the mentioned
obstacles. Please be as specific as possible, and as complete as is necessary.

c) At the end of the questionnaire space is provided for you to list methods, materials, procedures, etc., you generally use in teaching, to develop reflective thinking in your students. (Please attach any materials such as samples of questions, resource or teaching units developed in your school or school system, and the like, which you think might be of interest.)
Position: Teacher of __________________________
Principal _____ (Check)
Other __________________________

1. a) Teachers' lack of understanding of reflective thinking and its role in individual and group behavior..............1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

2. a) Teachers' lack of skill in guiding students in the development of reflective thinking................. 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

3. a) Teachers' lack of competency in the subject matter of instruction....... 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

4. a) Teachers' lack of conviction in the values of reflective thinking....... 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.
5. a) Teachers' use of conventional, less time-consuming methods of teaching (e.g., recitation, lecture) because of overloaded schedules, large classes or other reasons. 

b) Illustrations of successful practices used to overcome this obstacle.

6. a) Teachers' emotions, feelings, disturbances and/or mental blocks (e.g., wishes, desires, fears, self-interest, self-love, etc.)

b) Illustrations of successful practices used to overcome this obstacle.

7. a) Disagreement among educators on the applicability of reflective thinking to certain problems of living (e.g., morals, religion, aesthetics)

b) Illustrations of successful practices used to overcome this obstacle.

8. a) Failure of teacher-education institutions to prepare teachers and administrators who know how to utilize reflective thinking.

b) Illustrations of successful practices used to overcome this obstacle.
9. a) Continued pressure of colleges for conformity to prescribed entrance requirements................ 1 2 3 4 5
b) Illustrations of successful practices used to overcome this obstacle.

10. a) Lack of basic research on the nature of problem-solving operations at various developmental levels... 1 2 3 4 5
b) Illustrations of successful practices used to overcome this obstacle.

11. a) The presence of faulty theorizing about problem-solving processes (e.g., tendency to rule out the "aesthetic component" or feeling aspect of problem-solving processes).1 2 3 4 5
b) Illustrations of successful practices used to overcome this obstacle.

12. a) Overemphasis by teachers, school administrators and lay public on the transmission of the social heritage as a major purpose of education......................... 1 2 3 4 5
b) Illustrations of successful practices used to overcome this obstacle.
13. a) Intellectual dishonesty of school administrators who pay only verbal allegiance to the values of reflective thinking in the school program. 

b) Illustrations of successful practices used to overcome this obstacle.

14. a) The fixed and prescribed nature of the school curriculum (e.g., courses of study outlined in terms of subjects or textbooks to be covered, rather than concepts to be developed or problems to be solved).

b) Illustrations of successful practices used to overcome this obstacle.

15. a) Lack of adequate instructional materials for teaching reflective thinking appropriate to the intellectual level of students.

b) Illustrations of successful practices used to overcome this obstacle.

16. a) Lack of adequate instruments for evaluating progress of students in learning to think reflectively.

b) Illustrations of successful practices used to overcome this obstacle.
17. a) The presence of "shunned or closed" areas of inquiry in the school and the community (e.g., sex, communism, race problems). ...................... 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

18. a) Lack of family and community understanding of the values and contributions of reflective thinking. ..... 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

19. a) The unquestioned acceptance by the family and community of strong traditions, prejudices, creeds, ideas and institutions. .............. 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

20. a) Reliance of people upon dogmas or absolute ideologies (e.g., philosophical, religious). ............... 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.
21. a) The prevailing use of extensive propaganda in the community (e.g., through mass media) ................... 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

22. a) Anxiety on part of community, family, and teachers which leads individuals to seek for final solutions of problems of deep concern to them, rather than an attitude of open inquiry.... 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

23. a) Students' use of faulty language expression or comprehension and/or the lack of adequate vocabulary............. 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.

24. a) Inability of students to detect erroneous conclusions which are the result of logical fallacies in reasoning (e.g., false analogy, overgeneralizations, wrong inferences), and the lack of instructional provision to improve the situation............. 1 2 3 4 5
   b) Illustrations of successful practices used to overcome this obstacle.
25. a) The paucity of students' experiences in quality and quantity as a result of low socio-economic status of the family.......................... 1 2 3 4 5

b) Illustrations of successful practices used to overcome this obstacle.

What methods, techniques, materials, types of classroom and examination questions, etc., do you generally use in teaching to develop reflective thinking in your students?
AUTOBIOGRAPHY

I, Aklilu Habte, was born in Addis Abeba, Ethiopia, September 2, 1929. I started my elementary education in Guebre-Mariam School and completed it in Tafari Makonnen School, at which school I also received my secondary education. Upon graduation in 1950, I enrolled at the University College of Addis Abeba, from which institution I received my Bachelor of Arts degree in August 1954. I was then granted a scholarship by the Ethiopian Government to study in Canada and The United States of America. I enrolled at the College of Education, University of Manitoba, Canada, and obtained my Bachelor of Education degree in May 1955. The same year in the Autumn Quarter, I enrolled at the Ohio State University and received my Master of Education degree in the Summer Quarter of 1956. During the Academic year, 1957-8 I served as research assistant to Dr. Edgar Dale of the Bureau of Educational Research and Service, Ohio State University. Since receiving the Master's degree I have been working toward completing the requirements for the degree of Doctor of Philosophy.