DOCUMENT RESUME

ED 039 161 24 SO 000 016

AUTHOR Massialas, Byron G.; And Others
TITLE Structure and Process of Inquiry into Social Issues in Secondary Schools. Volume 1, Inquiry into Social Issues.
INSTITUTION Michigan Univ., Ann Arbor.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO BR-6-1678
PUB DATE 9 Apr 70
CONTRACT OEC-3-7-061678-2942
NOTE 319p.

EDRS PRICE EDRS Price MF-$1.25 HC-$16.05
DESCRIPTORS Affective Behavior, *Classroom Observation Techniques, Classroom Research, *Cognitive Processes, Communication (Thought Transfer), Discussion (Teaching Technique), Evaluation Techniques, *Inquiry Training, Interaction Process Analysis, Models, Secondary Grades, Social Problems, *Social Studies, Student Attitudes, Student Behavior, Teacher Attitudes, Teacher Behavior, *Verbal Communication
IDENTIFIERS *Michigan Social Issues Cognitive Category System

ABSTRACT

The main objective of this study was to develop a category system to analyze or evaluate issue-centered classroom discussion (teaching-learning processes, cognitive and affective classroom interaction, verbal transactions (communication patterns), and, achievement of behavioral objectives). Behaviors investigated were: the extent of Michigan secondary school teachers (biology, english, and social studies) discussion of issues in the classroom; how and why certain teachers pay more systematic attention to issues than others; how students perceive issue-discussion, and the skills used in examining issues; and, what personality or school factors influence the nature of the discussion. The survey instruments used were the Michigan Social Issues Teacher and Student Questionnaires, Minnesota Student Attitude Inventory and the Harvard Social Issues Analysis Test-2. Classroom dialogue was observed and recorded to identify the range of verbal communications, logical and affective operations, and the socio-psychological environment of 17 classrooms. Data analysis is covered in chapters 2, 3, 6, and volumes 2 and 3 of this study. Chapters 4 and 5 traced the category system development, and, the methodological and substantive means for presenting and imterpreting data collected through system use. A related document is: SO 000 017. (SRE)

STRUCTURE AND PROCESS OF INQUIRY INTO SOCIAL ISSUES IN SECONDARY SCHOOLS

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ANN ARBOR, MICHIGAN

1970

VOLUME I

INQUIRY INTO SOCIAL ISSUES

The research reported herein was performed pursuant to contract OEC3-7-061678-2942 with the United States Department of Health, Education, and Welfare, Office of Education.

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CONTENTS OF FINAL REPORT

Preface

This report constitutes the product of approximately three years of work. The project began in the fall of 1967 and continued until 1970. Our main purposes in conducting the study were twofold: (1) To determine the status of social issues instruction in Michigan secondary schools; and (2) To develop a category system which enables both teachers and researchers to analyze meaningfully classroom verbal interaction centering on social issues. These goals have been met. Our procedures and findings are included in this report and in the companion volumes.

In pursuing the goals of the study, we have beer extremely fortunate in bringing together a very competent and highly motivated team of researchers and supporting personnel. In addition to the principal investigator, Nancy Freitag Sprague and Jo A. Sweeney comprised the core of the project team. Each one on the team made different but most valuable contributions to the total effort. Nancy Sprague contributed to the development and refinement of the Michigan Social Issues Cognitive Category System and she was in charge of processing and analyzing good portions of the quantitative data. With her expertise in statistics and research design, Nancy developed new computer programs which allowed us to perform, for the first time, high-level analyses of classroom interaction patterns. Jo A. Sweeney also made con-

tributions to the development of the category system, but worked primarily with principals, teachers, and students in several school districts in Michigan from which our sample was drawn. Jo was most successful in relating to the teachers the goals and procedures of the project and in getting the cooperation of both teachers and administrators in collecting indispensable classroom data. Primarily due to her efforts the project has never been refused access to any of the schools in the original sample. Both Nancy and Jo managed to perform well all their different roles in the project and in the university and to keep their good humor even when the "going" got rough. The principal investigator is grateful to them for their contributions, for their enthusiasm, and for their continuing faith in the project and in the philosophy of inquiry and social issues instruction which underlies the study.

The writing of the first volume of the final report to the U.S. Office of Education has been a team effort. Each member of the core team took primary responsibility for a chapter of the report. Several drafts of the material were written and all members of the team added to and critiqued each other's work. The primary responsibility for writing each chapter was divided as follows:

Chapter I : Byron Massialas
Chapter II : Jo A. Sweeney
Chapter III: Nancy Sprague
Chapter IV : Byron Massialas
Chapter V : Byron Massialas & Nancy Sprague
Chapter VI : Byron Massialas

Some of the material reported here formed the basis for presentations at the annual meetings of the American Educational Research Association in 1969 and 1970. Also, some of the findings of the study were reported at the 1969 meeting of the National Council for the Social Studies.

The report also includes two dissertations as follows:

Mary Sugrue (University of Michigan, 1969)
A Study of Teacher/Student Attitude-Congruence Patterns and Student Evaluations of Controversial Social-Issues Classes and Teachers

Nancy Sprague (University of Michigan, in process)
Social Issues Classroom Discourse: A Study of Expository, Inquiry-Nonprobing and Inquiry-Probing Classes

These dissertations constitute Volumes II and III of the final report. Volume III will be released in the summer of 1970.

Two other dissertations, which are not submitted as part of the final report, were based on the data collected by the project. These dissertations are as follows:

Jo A. Sweeney (University of Michigan, 1969)
The Attitudes of Secondary School Students Toward Social Issues Instruction and the Development of Critical Thinking

Richard Knight (University of Michigan, in process)
Characteristics of Secondary School Teachers who Deal with Social Issues in their Classrooms

Several colleagues assisted the project at various stages of its development. Professor Ned Flanders was extremely helpful at the initial inception of the project during 1965-66. He provided valuable assistance in identifying and developing the operational components of the project, and he offered needed

encouragement during critical periods. Lee Ehman (Indiana University), Mary Sugrue (Indiana University), Charles Billings (University of Kentucky), Jack Zevin (Queens College), Milton Baker (State University of New York at Buffalo), and Richard Knight (Utah State University), all former students in the Social Science Research Training Program at the University of Michigan, have given us invaluable insights, advice, and critical commentary on the study. To these colleagues and friends we extend our thanks and deep appreciation. Needless to say, while all these educators contributed to the strengths of the report, only the core team share in its weaknesses.

To June Rayle, Leslie Krauz, and Dixie Farquharson we owe a special word of thanks. June was one of the original members of the project staff and for two years performed significant services in collecting classroom dialogue, transcribing the tapes, and typing project questionnaires and reports. As a member of the staff joining the project in the beginning of its second year, Leslie was an invaluable help in coding and preparing the data for analysis. Dixie has done a wonderful job in typing several project papers and reports as well as the final report to the Office of Education.

It has been quite rewarding to work on this project--both as a learning experience in working with schools, teachers, and kids, and as an experiment in prolonged and concentrated team effort. There were some crises, but all of us managed to survive them. We hope the findings of this report regarding

inquiry and social issues instruction will generate additional experimental interest among educators and that this area of teaching and research will find a permanent place in the curriculum of the schools and colleges of education.

Byron G. Massialas

Ann Arbor
April 9, 1970

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CHAPTER I

THE CONDUCT OF INQUIRY INTO SOCIAL ISSUES

The curriculum of the secondary school in the United States is currently undergoing extensive re-examination and revision. While it is difficult to isolate and locate the exact causes for this large-scale curriculum re-examination, it is apparent that the ideas resulting from the Woods Hole Conference of September 1959, have had a considerable impact on subsequent curriculum change and development.

The main principle guiding the current effort at curriculum change as reported by Jerome Bruner in The Process of Education and by such groups as the School Mathematics Study Group, the Biological Sciences Curriculum Study, and the Physical Science Study Committee emphasizes the importance of the "structure of organized knowledge" and seeks to develop a school program based on concepts, generalizations, and methods of research in the respective scholarly discipline.[1] The quest to furnish the educational conditions under which students may discover fundamental ideas of a discipline has had a profound

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[1] A significant volume dealing with the organization, substance, and syntax of the major disciplines is, Stanley Elam, (ed.), Education and the Structure of Knowledge (Chicago: Rand McNally and Company, 1964).

impact on projects in the humanities and in the social studies which, again, with a few exceptions, stress the analytical and cognitive aspects of learning as defined by scholars in the humanities and in the social sciences.

While the objective of developing critical thinking or skills of inquiry elicited by exposure to the theories, concepts, and tools of investigation of the learned disciplines is certainly most worthwhile, it is equally desirable and relevant to the social and educational tasks of teachers to inquire into the state of affairs in the teaching of values in matters concerning public policy and social controversy. At this point in the development of our civilization, which according to some observers represents a period of great crisis, it is very important to deal with the crucial problems of our society in an intellectually and ethically defensible way. The pressing problems of the world are not problems of fact but of value. What shall we do with a continuing war in Vietnam? What shall we do with the tremendous waste of food resources in some countries and the desperate needs of keeping humans alive in others? What should the individual, as an individual, do in response to these crucial problems? By what means should the individual be given the opportunity to reflect on these problems and take defensible positions leading to social action?

At present very few projects and research studies focus

directly on the ways teachers and students discuss and examine in the classroom social issues such as interracial marriage, pornography and its control, racial discrimination in society, human reproduction, nuclear disarmament, biological evolution, the impact of automation on employment, matters of foreign policy, etc. Even fewer studies attempt to provide the necessary classroom strategies which will enable students and teachers, jointly, to attend to social issues explicitly and develop inquiry models to deal with such issues. It is the major purpose of the study reported here to develop classroom tools which will facilitate the explicit and systematic discussion of social issues. Before we outline and explain the more specific objectives of the study, let us briefly look at the state of relevant research.

Studies of Social Issues in the Schools

Studies relating to the examination of social issues in the schools have generally emphasized the influence of pressure groups and movements as well as school and community relations regarding academic freedom.[2] With the exception of the Harvard Project, which experimented with various teaching styles and strategies (e.g., recitation or

[2]John P. Lunstrum, "The Treatment of Controversial Issues in Social Studies Instruction," in B.G. Massialas and F.R. Smith, (eds.), New Challenges in the Social Studies: Implications of Research for Teaching (Belmont, California: Wadsworth Publishing Co., 1965), pp. 121-153.

Socratic) in analyzing political controversy in the classroom,[3] there are virtually no significant studies which focus on the discussion of social issues in the classroom. Studies and reports based on subjective judgments or reviews of textbooks and other educational media suggest that teachers do the following: (1) They try to avoid raising socially sensitive questions in the schools; (2) Even if they are willing to discuss social issues, they do not consciously incorporate them in the curriculum; (3) Those who deal with social issues do so superficially, often showing an undue reliance on authority as the basis for judgment; or (4) Many assume a role of ethical neutrality on social issues. The reasons which may partially explain the foregoing postures of the teacher are: (1) The school curriculum continuously demands his preoccupation with the coverage of traditional materials; (2) He often lacks the skills and strategies with which he could help students examine values systematically; (3) Traditional materials and texts do not generally encourage careful analysis of value issues; (4) The teacher tends to think of values as well as issues as being part of the private sector of the individual, and he rationalizes that private opinions should not be publicly "violated;" and (5) The pressures from various interest groups restrict his academic freedom and

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[3]Donald W. Oliver and James P. Shaver, Teaching Public Issues in the High School (Boston: Houghton Mifflin Company, 1966).

may even force him to comply with the wishes of such groups.[4] In addition to confirming or rejecting some of these claims, the present study proposes to record actual classroom discourse and investigate carefully the logical and affective operations performed in class. This study also examines some of the factors that relate to teachers' and students' willingness to discuss social issues within the classroom environment. Previous experience in recording and analyzing issue-centered discourse was gained by the director of this study in the Chicago public schools over a period of three years. While the analysis and interpretation of classroom discourse from this preliminary work was mostly subjective and utilized a gross psychoanalytic approach, it provided some insights into the operations performed in real classroom situations, as well as possible ways of categorizing and analyzing classroom discourse.[5]

Studies of Critical Thinking

As we mentioned before, most of the recent studies in

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[4]Lawrence E. Metcalf, "Anti-Communism in the Classroom: Education or Propaganda?" Nation, 194 (March 10, 1962), pp. 215-216; Stanley E. Ballinger, "The Social Studies and Social Controversy," School Review, 71 (Spring 1963), pp. 97-111; Mark M. Krug, "'Safe' Textbooks and Citizenship Education," School Review, 68 (Winter 1960), pp. 463-480; James P. Shaver, "Reflective Thinking, Values, and Social Studies Textbooks," School Review, 73 (Fall 1965), pp. 226-257; C. Benjamin Cox and Byron G. Massialas, (eds.), Social Studies in the United States: A Critical Appraisal (New York: Harcourt, Brace and World, Inc., 1967).

[5]Byron G. Massialas and Jack Zevin, Creative Encounters in the Classroom (New York: John Wiley and Sons, Inc., 1967). See, in particular, Chapter 4, "Examining Values," pp. 195-246.

inquiry or critical thinking deal mainly with the structure of knowledge and aspects of learning which stress content-related operations and skills. They do not deal extensively with the affective components of instruction or the judgmental processes of the analysis of issues which are based in part on human emotions, aspirations, feelings, appreciations, attitudes, and values. For example, the School Mathematics Study Group, CHEM Study, the Physical Sciences Study Committee and other major national projects, including those in the social studies, basically develop and emphasize the concepts and skills one needs to have in order to function as a mathematician, a chemist, a physicist, etc.[6] The teaching strategy currently used in mastering the concepts and skills in the foregoing disciplines is "discovery," a technique popularized by Bruner and explored by others.[7] As stated by one researcher, the goals of inquiry training and of discovery in this context are threefold: (1) increased productivity of operations and expanded data gathering, (2) increased student autonomy and, correspondingly, minimum guidance from teachers, and (3) increased discipline in designing and executing a scientific experiment and under-

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[6]See Robert W. Heath, (ed.), New Curricula (New York: Harper and Row, 1964); and G.W. Ford and Lawrence Pugno, (eds.), The Structure of Knowledge and the Curriculum (Chicago: Rand McNally and Company, 1964).

[7]Jerome Bruner, "The Act of Discovery," Harvard Educational Review, 31 (1961), pp. 21-32.

standing the rules of logical inference.[8]

The most elaborate attempt to develop a classification system of cognitive or intellectual skills was made by Bloom and associates in the Taxonomy of Educational Objectives, Handbook I. The Handbook assumes that intellectual performance moves from lower to higher cognitive tasks, e.g., from knowledge and comprehension to application, analysis, synthesis, and evaluation. This taxonomy along with the one in the affective domain may provide some starting points for the measurement and classification of classroom discourse in the proposed research.[9]

Several research projects that studied and analyzed linguistic behavior in the classroom emphasized the logical or intellectual operations in discussion. Smith and Meux defined logical operations as "the form which verbal behavior takes as the teacher shapes the subject matter in the course of instruction."[10] The logical operations they studied included thirteen general categories such as

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[8]J. Richard Suchman, Inquiry Training: Building Skills for Autonomous Discovery, a project sponsored by the U.S. Office of Education, (mimeo), n.d., p. 10.

[9]Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives; Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956); and David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia, Taxonomy of Educational Objectives; Handbook II: Affective Domain (New York: David McKay Company, Inc., 1964).

[10]B. Othanel Smith and Milton O. Meux, A Study of the Logic of Teaching, a report to the U.S. Office of Education, Project No. 258 (7257) University of Illinois, n.d., p. 3.

defining, describing, designating, stating, etc. Other investigators using a similar conceptual structure devised appropriate categories to classify intellectual operations in verbal communication.[11]

Many of the studies reviewed here implicitly accept Dewey's classic definition of reflective or critical thinking as judging and evaluating ideas in the light of the grounds that support them and the subsequent drawing of warranted conclusions.[12] While this definition of critical thinking (referred to by some as the "scientific method") and the numerous skills to which it applies involve necessary classroom tasks and procedures, it is important to consider the larger tasks and procedures which encompass the critical discussion of social issues. For example, hypothesis formation is an important operation in scientific investigations. Accordingly, practically all of the new curricula which emphasize the structure of knowledge of the organized disciplines stress this operation. Unless, however, one broadens this operation to include

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[11]See, for example, Mary Jane McCue Aschner, The Analysis of Verbal Interaction in the Classroom, paper delivered at the Conference on Research and Theory in Teaching, Teachers College, Columbia University, November 2-3, 1962, 25 pp. (dittoed); Arno A. Bellack and Joel R. Davitz, The Language of the Classroom (New York: Teachers College, Columbia, 1963), (Cooperative Research Project No. 1497).

[12]John Dewey, How We Think (Boston: D.C. Heath and Company, Rev. Ed., 1933), p. 9.

what we call "position-taking," the issue or value component of classroom discussion does not appear in the analysis of classroom communication or, if it does appear, it is presented as an operation extraneous to the main concern which is the discovery of empirically testable principles.

Furthermore, unless the psychological climate of the classroom is taken into account (operations dealing with encouragement, punishment, etc.) the system that emerges from the strict application of the scientific method is devoid of the human element and of the affective relationship between teacher and student. Given all this, our aim was to develop a model for the reflective examination of issues which accounts for the totality of the classroom verbal interaction and attends to both empirically testable propositions and collectively confirmable positions on social problems.

Studies of Category Systems in Verbal Communication

Reference has already been made to the studies attempting to classify the content of classroom discourse under logical categories, e.g., studies by Smith and Meux, Bellack and Davitz, and Aschner. Through extensive study of tape recordings, these researchers were able (a) to devise a unit of measurement, such as the "episode," in order to analyze the verbal behavior recorded in the transcripts, (b) to evolve categories under which all classroom discourse may be classified, (c) to quantify the frequency of recorded

operations, and (d) in some cases, to relate classroom discourse to teaching styles, student achievement scores, etc. Flanders devised a ten-category system to analyze teacher-student interaction in "live" situations. Since his main concern is the influence pattern of the teacher as it relates to the degree of students' freedom of action, he devised relevant categories applying to "teacher talk" and "student talk." Under direct teacher influence he placed lecturing, giving directions, and criticizing. Other tasks and procedures were placed under "teacher indirect influence" and "student talk."[13] The use of Flanders' classroom interaction analysis schedule permits one to make direct observations of spontaneous acts in the classroom and systematically to classify the discourse under the given categories. Some of the dimensions of this system--e.g., frequency of student vs. teacher classroom participation--have been considered in developing the instruments in our study.

The category system in the analysis of political controversy developed by Oliver and Shaver and elaborated upon by Berlack, may provide a conceptual framework and relevant categories for viewing controversial issues which form the

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[13]Ned A. Flanders, Teacher Influence, Pupil Attitudes, and Achievement, U.S. Department of Health, Education, and Welfare, Office of Education, OE-25040, (Cooperative Research Monograph No. 12, 1965).

focus of this study. Their analytical category system (ANCAS) stems from the basic assumption that political controversies have three distinguishable sets of problems--definitional problems, value problems, and factual problems. Definitional problems occur when there is ambiguity in key terms, hence a difficulty in the public communication of a value. Value problems emerge when two points of view about the worthiness and desirability of an action or a policy are contradictory--there is an apparent value conflict which may be resolved by tracing the logical consequences of the value or by reconsidering or qualifying the original value judgment. Factual problems occur when the empirical referents of a value-assertion are in dispute. What one needs to do here is to confirm the truth or falsity of the evidential base of the value through vigorous experimental techniques involving observation, testing, and generalization. Given these problems, the Harvard Project "attempted to identify complex patterns of analysis that represent competent handling of controversy."[14] Four general patterns of analysis were applied: (a) establishing the point at which a value is violated--the factual emphasis, (b) establishing the point at which the value is violated--the value emphasis, (c) clarification of value conflict, and (d) translating a value

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[14]Harold Berlak, The Construct Validity of a Content Analysis System for the Evaluation of Critical Thinking in Political Controversy (University of California, Santa Barbara, February 17, 1964), (dittoed), 21 pp.

conflict into an issue of fact. Within this framework more specific categories were developed. While some of the ideas proposed in the Harvard Project have been incorporated, this study is different from the Harvard Project in that it focuses on broad social issues (rather than limiting itself to political issues), it includes classes in biology and in English in addition to social studies, it studies natural rather than contrived classroom situations, and it tries to establish how psychological and sociological factors in both students and teachers relate to the examination of issues in the classroom.

The Objectives and the Chronology of the Study

Our main goal in conducting this study was to develop a category system which would enable the teacher to evaluate his and his students' performance in the classroom, especially when social issues are examined. In order to accomplish this prime objective we sought to establish the extent to which issues were discussed in secondary schools and to identify certain personality or school factors which influence the nature of the discussion of issues. More specifically, our goals were as follows:

1. To determine the extent to which secondary school teachers of biology, English, and social studies discuss issues in the classroom;

2. To explain why certain teachers pay more sy tematic attention to issues than others;

3. To observe and record classroom dialogue focused on issues in order to identify the range of verbal

communications taking place in the classroom;

4. To evolve a category system which reliably discriminates between types of verbal transactions in the classroom, focusing primarily on the cognitive domain (but including the affective as well);

5. To apply the cognitive system to selected classroom dialogues in order to establish patterns which differentiate one class from another.

In addition to the specific goals of the study indicated above, the investigators sought to find as much about the psychological and social milieu of the classroom as possible. Thus extra steps were taken to collect information about the teachers and students participating in the study in order to provide a broader perspective for explaining the verbal behavior in the classroom. The analyses of these data were done primarily in Chapters II and III, and in the two doctoral dissertations that appear in Volumes II and III of this study.

Given the foregoing objectives, the project began its actual operations in the fall of 1967, by randomly selecting 60 secondary schools in the state of Michigan and surveying all of the biology, English, and social studies teachers in 58 of these schools. The survey instrument, the Michigan Social Issues Teacher Questionnaire, was developed by the project staff and was designed to measure the extent and quality of discussion of social issues in the classroom. The remainder of the academic year 1967-68 was devoted to (1) analyzing teachers' responses to the questionnaire, (2) selecting for in-depth study a smaller group of social studies

teachers who spent at least 25 percent of their classroom time discussing social issues and who were willing to participate further in the research study, and (3) developing a schedule of visitation for classroom observation, teacher interviews, administration of student instruments, and tape recording. Approximately half of the social studies teachers selected for more extensive data gathering were visited in the Spring of 1968; teachers in the other half of the sample were taped and given the other research instruments in the Fall of 1968.[15] On the basis of the recordings made and transcribed in the Spring and Fall of 1968, we began the process of developing the Michigan Social Issues Cognitive Category System.

It should be stated at the outset that the investigators started out with a rational model of examining both value and factual components of social issues but since neither teachers nor students came even close to using such a model in actual discussion, certain modifications had to be made. The model we began with assumes that members of a class will be able to identify a social problem of importance and then develop alternative positions for resolving it.[16] In the resolution of a problem, alternatives are judged in terms

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[15]For a detailed description of the sampling and taping procedures see Appendices I and IV.

[16]For specific details on the model see Byron G. Massialas and C. Benjamin Cox, Inquiry in Social Studies (New York: McGraw-Hill Book Company, 1966), pp. 153-178.

of their consequences, which in turn are traced to certain goals accepted by the participants as having priority over others. To the extent that a suggested solution to a social problem relates positively to a desirable goal, it may be accepted. To the extent that it does not, it may be rejected. The model further assumes that the teacher will not try to indoctrinate students in his own position but will provide a climate where each expression of position is valued, and public grounds to support such positions are asked for. We have called the posture of the teacher applicable to a reflective classroom environment defensible partisanship. This posture has the following elements:[17]

(1) A commitment to the democratic ethic implying:

   (a) the free expression of different and often conflicting viewpoints,

   (b) the conscious avoidance of authoritative imposition of values, and

   (c) the equitable application of the rules of the game to all, regardless of their status in the school and in the community.

(2) The rational procedures of inquiry which involve the judging of positions on their merits as they relate to acceptable criteria and lead to desirable consequences.

(3) The admission that preferential selection of values is unavoidable and that defensible choices are better than uncritical, impulsive choices.

While the rational model and the defensible partisanship

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[17] Ibid., p. 177.

posture of the teacher, mentioned above, provided the initial framework of the study, many adjustments were made as the investigation moved from the abstract level of theorizing to the concrete level of the classroom. For example, several assumptions we made about teacher role vis-a-vis the objective treatment of social issues were not borne out. Certain cognitive operations which we considered to be necessary to the critical examination of issues were not readily observable in the classroom. For example, we began with several categories of definition described in terms of verbal operations which may be performed in the classroom. As we observed actual verbal discourse, however, we had to make certain modifications in order to represent reality. Thus at one point in our study there were three categories of definition--stipulative, descriptive, and normative. Further observation led us to our present category number seven which is a combination of definition and clarification and includes three sub-categories--"General-Stipulative" (7.1), "Quality-Value" (7.2), and "Clarification"(7.3). Most importantly, however, we found out that value-laden discourse on social issues did not constitute a neat category of its own which could be easily identified and analyzed. On the contrary, value and issue-discourse was always interwoven with discourse dealing with "facts" and traditional subject-matter topics. In no case were the personal values of the students explicitly explored. Therefore, we were faced

with a dilemma as follows: should we use strictly a rational model which would neatly divide the logical dimensions of critical thinking of social issues, or should we use the same model as a broad framework but evolve a system which would measure critical discourse on issues from real classrooms? After deliberation and numerous pilot observations, we chose the second alternative. We reasoned that an "ideal-type" model would be appropriate to train teachers regarding desirable performance in the classroom but inappropriate to describe and analyze actual performance. The situation made us confirm the idea that a theory of instruction is prescriptive--it suggests procedures and patterns of behavior that teachers ought to follow. An explanation of instruction, however, is descriptive and tries to answer questions of how phenomena or events are related to each other and how a change in one will affect a change in the other.

As a result of this choice, the category system we developed applies to all classroom discourse, including that dealing with social issues. Also, the system is sensitive to broad behavioral tasks in the classroom, and it is particularly useful in analyzing dialogue which occurs between student and teacher as opposed to a classroom where the mode of presentation is teacher lecture. The instrument which finally evolved out of direct observation in the classroom was labeled the Michigan Social Issues Cognitive Category System.

A full description of the system is given in Chapter IV.

Summary

With all the fury in the past decade for curriculum revision stressing the structure of knowledge as developed by Bruner, Schwab, Phenix and others, the social issues perspective has not received concentrated attention in the educational literature. Yet this perspective is emerging as the most important one in education in view of pressing social problems--war, inter-ethnic conflict, the increasing gap between the rich and the poor, problems of pollution and environmental control, and the like. Given these conditions in our society and in the world, we can no longer wait for social issues to be discussed only incidentally in the classroom. These pressing social issues need to be built into the formal curriculum of the schools and to be dealt with systematically by the teacher and the students.

In order to enhance the rational study of social issues and to give the teacher a framework to look at his own and his students' performance, the project developed a number of instruments: The Michigan Social Issues Teacher Questionnaire aims at finding out whether or not a teacher deals with social issues, and, if he does deal with them, what is his philosophy and dominant style; the Michigan Social Issues Student Questionnaire parallels the one developed for the teacher and seeks to find out how students perceive issue-discussion and to evaluate their skills in examining a social

problem; the Michigan Social Issues Cognitive Category System is designed to provide a framework and a set of classroom verbal operations to help one analyze the communication patterns in the classroom. The chapters that follow provide a detailed presentation of these instruments and how they were and could be used. We realize that there are still tremendous gaps in our work, as well as in the work of others who study this field of theory and practice. Yet we believe that a concentrated effort such as this which includes a number of reports and studies linked together by a common theme do provide a new thrust in the initial study of social issues in the schools.

CHAPTER II

IDENTIFICATION OF SOCIAL ISSUES TEACHERS

In a democratic society where citizens are constantly expected to make judgments regarding the resolution of social issues, it is important that individuals be able to identify and analyze the value as well as the factual components of positions on social issues. Our schools should encourage young people to examine critically such issues so that they may act constructively in the resolution of social controversy. Schools and teachers, at least in the more recent past, apparently have neglected the task of preparing students to consider alternative ways of resolving social conflict. The limited research concerning social issues in schools suggests that: (a) such issues are not incorporated in the curriculum and are not purposefully included in classroom materials, (b) teachers are not trained to examine systematically social controversy, and (c) teachers are reluctant to examine many social issues openly because of the possibility of sanctions from the community or school administration.

The research reported in this chapter investigates the propositions stated above. Do these propositions adequately describe the current status of social issues in our schools? Are young people prepared to deal rationally with social controversy? Are students learning how to support their value positions and to examine critically the grounds upon which

they rest? Do teachers capitalize on the stimulation and personal involvement inherent in a discussion of controversial issues? If the social issues of our time are now discussed in the classroom, how do teachers and students spend their time? These are some of the questions which are considered in this chapter.

Procedures

The data analyzed in this chapter were taken from teacher responses to the Michigan Social Issues Teacher Questionnaire. This instrument was mailed to a probability sample of secondary schools in Michigan. Biology, English, and social studies teachers in sampled schools received the questionnaire. It was assumed that because of the nature of the subject matter, these teachers would be more likely to discuss social issues than other teachers, e.g., in mathematics or science. Seventy-three percent or 493 teachers of the 682 teachers in the total sample completed and returned the questionnaire.[1] The teachers were

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[1]The procedure used to select the sample was as follows: The Michigan Education Directory, obtained from Lansing, Michigan, which lists all of the public and private schools in the state, was used to make a list of all schools in the state containing grades 7-12. Schools which included two or more grades in the 7-12 range were included in our sampling frame. For example, schools containing grades 1-7 were not included in our list, but schools containing grades 5-8 were included. Each school on our list was assigned a number. Using a random number table, sixty schools were selected for the first phase in the development of our sample. The principals of the selected schools were contacted by mail and asked to provide a list of all the biology, English, and social studies teachers in their building who taught any of the grades, 7 through 12. This list of teachers composed the second phase of the sampling procedure. Fifty-seven schools, with a total of 682 social studies, English, and biology teachers, agreed to participate. (See Appendix I for a detailed description of the sampling procedure and Appendix II for the Michigan Social Issues Teacher Questionnaire.)

asked to respond to items dealing with: (1) identification of issues which they considered to be controversial, (2) how much time they devoted to such issues, (3) a fact and opinion matrix (which asked the teachers to differentiate between statements of fact and statements of opinion), (4) issues they felt should or should not be discussed in the classroom, and (5) the types of materials they preferred to use in such discussion. Also, some items asked the respondents to indicate their attitudes toward the roles of teachers and students in the discussion of controversial issues. In addition, several demographic items on the teacher were included in the questionnaire.

DISCUSSION OF SOCIAL ISSUES IN THE CLASSROOM

How much time do teachers spend discussing controversial social issues? Are teachers willing to discuss all social issues or do they avoid some issues? Do the teachers in our sample exhibit concern for sanctioning agents? Are some social issues considered controversial by some teachers, but relatively non-controversial by other teachers? These are some of the questions considered to be focal here.

Issues Discussed and Not Discussed

All people do not identify the same issue as controversial. A topic which is considered highly controversial by one teacher may be considered non-controversial by another. We were interested in knowing whether or not teachers were willing to discuss issues they considered highly controversial.

The teachers in the sample were given a list of topics and asked to identify each as (1) non-controversial, (2) somewhat controversial, or (3) highly controversial. In general, the results indicate that "race relations and integration," "Vietnam," "birth control," and "artificial insemination of human beings" are considered highly controversial issues by most teachers. One of the more interesting findings is that although both "race relations and integration" and "Vietnam" are viewed as highly controversial, they are considered acceptable topics for classroom discussion by the majority of our teachers. "Artificial insemination of human beings" and "birth control," on the other hand, are more often identified as taboo classroom topics.

Past research has suggested that teachers as an occupational group generally avoid discussing any type of controversy in the classroom. A recent investigation of teachers concluded that "the classroom is not looked upon as a medium for the expression of controversial opinions by teachers."[2] Our data challenges this statement. Although many teachers in our sample avoid discussing sex-related topics in the classroom, the overwhelming majority of the teachers are willing to discuss such controversial issues as "race relations and integration," "Vietnam," and "communist ideology." (See tables 5 and 6). Evidently the

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[2]Harmond Zeigler, The Political World of the High School Teacher (Eugene, Oregon: Center for the Advanced Study of Education Administration, University of Oregon, 1966), p. 116.

perceived controversial nature of an issue is not necessarily related to its acceptability as a topic for class discussion. Some issues perceived by the teachers as highly controversial are acceptable for class discussion while other highly controversial issues are avoided.

Sanction and Nonsanction Reasons for Not Discussing Issues

On the Michigan Social Issues Teacher Questionnaire, teachers were asked to indicate the reason or reasons why they would not discuss an issue in the classroom. Teachers' responses were coded as either a sanction or a nonsanction reason for not discussing an issue. The sanction reasons included: administrative disapproval, community pressure, or parental criticism. The nonsanction reasons included: "lack of class maturity," "personal reasons," and "not pertinent to subject matter."

Sanction Reasons: Some questions raised in this connection are: Do teachers avoid discussion of social issues because they anticipate, or are afraid of, punitive action? Do teachers feel administrative pressure to avoid certain topics? Do community groups act as watchdogs for society by exerting pressure on teachers to exclude from the classroom certain issues?

It is not uncommon for researchers and the general public to think of school teachers as an occupational group terribly concerned with sanctioning agents. In his Oregon study, mentioned before, Zeigler indicated that sanctions against certain expressive behaviors by teachers in the classroom are

perceived as originating from within the educational system rather than from the community.[3] He also found that within the educational system parents were considered to be the greatest threat.

The respondents in the Oregon study were asked whether or not they would argue in class for or against positions on given issues. For example, one question asked was, "Would you argue in class against the censoring of literature by people who feel it is pornographic?" In contrast, this study did not specify the stance of the teacher in relation to a given issue, but rather asked if the teacher would discuss a topic at all and whether or not he would consider certain topics to be surrounded by sanctions. The Michigan Social Issues Teacher Questionnaire presented a list of topics and asked the teachers to indicate the topics which they felt should not be discussed in the classroom. A second question asked the teacher to indicate the reason or reasons for not discussing certain topics. The fact that the items on the MSITQ[4] were more neutral than Zeigler's may have increased our teachers' willingness to discuss issues and decreased concern for sanctioning agents.

Table 1 indicates that the teachers in this sample considered parents to be the most salient sanctioning agent with regard to the open discussion of certain controversial issues.

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[3] Ibid., p. 157.

[4] MSITQ stands for the Michigan Social Issues Teacher Questionnaire.

Findings from this sample, in contrast to the Oregon study, which disclosed that most sanctions originated from within the system, did not suggest any significant distinctions between sanctions originating within the educational system and those outside. The Oregon study also showed that men are more sanction-prone than women, but the present analysis did not confirm this claim.

TABLE 1

TEACHER RESPONSE:
SANCTION REASONS FOR NOT DISCUSSING AN ISSUE

		Percent of Teachers Who Gave Sanction Reasons for Not Discussing Listed Issues		
Issues	N	Administrative Disapproval	Community Groups	Parental Criticism
Federal Aid to Education	459	0%	0%	0%
Race Relations & Integration	461	0	0	0
Marriage & Family Relations	461	1	1	2
LSD & "Pot"	461	0	1	1
Management-Labor Relations	461	0	0	0
Communist Ideology	461	1	0	1
Railroad Baron Era	461	0	0	0
Pornography & Its Control	461	4	3	7
Biological Evolution	461	2	3	3
Birth Control	461	5	6	10
Censorship	461	0	0	0
Vietnam	461	0	0	0
Artificial Insemination of Human Beings	462	9	9	17

In two studies, one conducted in Virginia and one conducted in Ohio, teachers appeared to endorse the principle of open discussion of controversial issues in school, but the same teachers avoided certain topics which were considered taboo in local areas. Those teachers indicated considerable concern for community pressure.[5] The MSITQ did not specifically ask whether or not certain topics were considered taboo by local communities. However, the general absence of concern expressed for sanctions in discussing issues indicates that most of the teachers in the Michigan sample do not perceive community, administrative, or parental criticism as factors hindering the discussion or examination of "hot" topics.

This contrast in findings might be explained in terms of regional differences between the South and the North. This explanation does not seem adequate, however, since this type of regional explanation would, at the most, account for only the contrast in findings in the Virginia and Michigan studies. Region certainly does not explain the difference in findings between the Michigan and Ohio studies.

A more plausible explanation seems to be the change in the country's mood since the 1953 and 1958 studies. The attention given to social issues by the mass media may well be

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[5]Calvin Deam, Opinion of Virginia Schoolmen Concerning the Treatment of Controversial Issues (Unpublished Doctor's Dissertation, Indiana University, 1958), and Truman L. Hall, A Study of the Teaching of Controversial Issues in the Secondary Schools of Ohio (Unpublished Doctor's Dissertation, Ohio State University, 1953).

a reflection and a cause of growing public interest in this domain. Perhaps teachers who see issues discussed openly in the public media feel less community or administrative pressure to avoid discussing social issues in the classroom. It might also be possible to explain the relatively low level of concern for sanctions in terms of higher job security and increasing teacher participation in union activities.

Nonsanction Reasons: We know from the analysis of the data that most teachers are not discussing social issues in their formal instruction in the classroom. If they are not avoiding issues because of fear of sanctioning agents, what other reasons can explain their stance? Table 2 indicates that nonsanction factors actually account for more unwillingness to discuss controversial social issues than sanction factors. Table 2 indicates that the primary reason cited by most teachers for not discussing the "Railroad Baron Era" is that the topic is considered not pertinent to the subject matter of the course. Table 2 also shows a high percentage of teachers who say that the reason they do not discuss the sex-related topics is lack of class maturity.

Class Time Spent Discussing Controversial Issues

How much class time do teachers devote to discussing controversial social issues? Are social issues the main focus of their course, or are they considered incidental to the main purpose of instruction?

TABLE 2

TEACHER RESPONSE:

NONSANCTION REASONS FOR NOT DISCUSSING AN ISSUE

		Percent of Teachers Who Gave Nonsanction Reasons for Not Discussing Listed Issues		
Issues	N	Lack of Class Maturity	Personal Reasons	Not Pertinent to Subject Matter
Federal Aid to Education	459	0%	0%	4%
Race Relations & Integration	461	1	0	1
Marriage & Family Relations	461	4	1	4
LSD & "Pot"	461	2	0	1
Management-Labor Relations	461	1	0	6
Communist Ideology	461	1	0	3
Railroad Baron Era	461	1	0	12
Pornography & Its Control	461	14	2	9
Biological Evolution	461	4	1	11
Birth Control	461	15	3	13
Censorship	461	0	0	1
Vietnam	461	0	0	1
Artificial Insemination of Human Beings	462	28	7	26

In the opinion of the teachers, do social issues constitute a legitimate way to spend class time? These are some of the questions that will be examined here.

It is important to keep in mind the limitations of possible qualitative inferences associated with amount of time spent discussing controversial social issues. Certainly time spent discussing issues is not the only consideration--quality of student-teacher interaction and intensity of treatment are also very important, but time does provide an index as to how central the teacher thinks social issues are to his goals of instruction.

The majority of the teachers generally do not spend a large portion of their class time discussing controversial issues. Table 3 indicates that 87 percent of the sample spend less than 25 percent of their teaching time discussing issues. Only three teachers in the Michigan sample apparently consider the examination of controversial social issues to be the main content of their courses.

TABLE 3

TEACHER RESPONSE:

TIME SPENT DISCUSSING CONTROVERSIAL ISSUES

Percent of Class Teaching Time Spent Discussing Social Issues	N	Percent of Teachers
0 - 10%	256	52.3%
10 - 25	170	34.7
25 - 50	43	8.8
50 - 75	13	2.7
75 - 100	3	.6
no response	4	.9

DEMOGRAPHIC PROFILE OF SOCIAL ISSUES TEACHERS

Is a "social issues" teacher different from teachers who avoid discussing controversy in the classroom? If we knew the sex or number of years an individual has taught, would we be able to say anything about the frequency of that teacher discussing controversial social issues? The analysis of several items included on the questionnaire gives a demographic profile of the "social issues" teacher.

Subject Area

Of the categories of teachers included in the Michigan sample, teachers of social studies spend the most time teaching about social issues. Perhaps this is to be expected due to the nature of their subject. It is possible that social issues are considered to be "current events," and consequently are included in the curriculum more often by social studies teachers. Some type of self-selection may also account for more social issues discussion by social studies teachers. Social studies may well attract people who are more willing to discuss social problems. When the sample is divided into the subject fields of biology, English, and social studies, we find that 6 percent of the biology teachers, 8 percent of the English teachers, and 16 percent of the social studies teachers spend more than 25 percent of their class time discussing issues. These findings suggest that (a) a majority of the teachers in our sample do not consider social issues the central focus of the learning

process and (b) proportionately, more social studies teachers discuss issues than either biology or English teachers.

Number of Years Teaching

Are the least experienced teachers the more likely persons to introduce social issues into the classroom? Are the most experienced teachers avoiding the discussion of controversy in the classroom?

The data in Table 4 indicate that teachers with four to five years of teaching experience are the most willing to discuss all issues. One might speculate that beginning teachers, who would be especially concerned with maintaining classroom discipline and who would lack job security, might avoid discussing controversial issues in the classroom. On the other hand, teachers with many years of teaching experience may not be as willing to discuss issues as younger teachers because they had their training before the classroom discussion of social issues was considered relevant or legitimate. It is difficult to offer a single explanation for the drop after the fifth year of teaching; at this pcint, possibly some of the teachers interested in issue discussion either leave teaching or move into administrative jobs.

When we look at the issues which teachers would not discuss for either sanction or nonsanction reasons by number of years teaching, it is clear that the most experienced teachers are willing to discuss some issues considered highly controversial

TABLE 4

WILLINGNESS AND UNWILLINGNESS TO DISCUSS SOCIAL ISSUES
(BY NUMBER OF YEARS TEACHING)

	Total Sample	0-1	2-3	4-5	6-10	11-20	21-30	Over 30
Percent of teachers who would discuss all listed issues in the classroom	42%	26	46	54	42	45	28	36
Percent of teachers who would not discuss one or more listed issues in the classroom	58%	64	54	46	58	55	72	64
N =	485	90	105	48	85	83	46	28

(see Table 5). Communist ideology, a topic the teachers indicated as highly controversial, is nevertheless considered an acceptable topic by 100 percent of the teachers with over twenty years of teaching and by 93 percent of the teachers with more than ten years in the profession. "Race relations and integration," another highly controversial topic, is also considered acceptable for classroom discussion by 96 percent of teachers with over ten years of teaching experience. It appears that the current popularity of the race issue has convinced even the most reticent classroom teachers of its validity as subject matter. Table 5 tends to weaken somewhat the idea that a teacher automatically accepts a more conservative attitude toward social issues solely in terms of his years on the job.

TABLE 5

UNWILLINGNESS TO DISCUSS SPECIFIC SOCIAL ISSUES
(BY NUMBER OF YEARS TEACHING)

	Percent of Teachers Who Would Not Discuss the Listed Issues in the Classroom							
		Number of Years Teaching						
Issues	Total	0-1	2-3	4-5	6-10	11-20	21-30	Over 30
Federal Aid to Education	5%	11%	5%	8%	2%	4%	0%	7%
Race Relations & Integration	2	3	1	0	2	0	4	4
Marriage & Family Relations	7	9	5	2	7	8	7	21
LSD & "Pot"	4	2	2	4	4	2	7	11
Management-Labor Relations	7	7	5	8	7	6	4	18
Communist Ideology	5	2	3	2	9	7	0	14
Railroad Baron Era	14	11	10	15	13	13	26	21
Pornography & Its Control	20	27	19	13	24	17	15	18
Biological Evolution	15	19	13	10	13	13	22	18
Birth Control	28	30	25	25	22	33	35	25
Censorship	2	1	3	0	2	1	0	7
Vietnam	2	0	1	0	2	4	0	11
Artificial Insemination of Human Beings	47	52	43	35	46	45	67	43
N =	485	90	105	48	85	83	46	28

When reading Table 5, it should be kept in mind that this table included both sanction and nonsanction reasons for not discussing a given topic. Consequently, although 26 percent

of the teachers with more than twenty years of teaching experience indicate they would not discuss the "Railroad Baron Era," it is not necessarily for the same reason that teachers do not want to talk about "artificial insemination of human beings."

Sex of Teacher

Sex of teacher is often considered an important explanatory variable in a teacher's willingness to discuss social issues. Table 6 indicates that significantly more male than female teachers would discuss all issues in the classroom.

TABLE 6

WILLINGNESS AND UNWILLINGNESS TO DISCUSS SOCIAL ISSUES
(BY SEX OF TEACHER)

	Total Sample	Sex of Teacher	
		Male	Female
Percent of teachers who would discuss all listed issues in the classroom	41%	49	33
Percent of teachers who would not discuss one or more listed issues in the classroom	59%	51	67
N =	488	262	226

Chi Square: 10.36 (.01 level of significance)

Previous findings indicate that male teachers are more expressive in the classroom than female teachers.[6] Our data substantiate this relationship. Table 7 indicates that males are much more willing to discuss sex-related topics, such as "pornography and its control," "birth control," and "artificial insemination of human beings," than females. The willingness on the part of males to discuss the sex-related issues may also account for the higher total percentage of males willing to discuss all issues. The finding that females are generally less willing than males to discuss sex-related topics might well be an example of the residual effects of Victorian teachings about sex. Another possible explanation might be that males, because of their greater sense of political efficacy, spend more class time than females examining social and political issues.

BELIEF IN STUDENT EXPRESSION AND BELIEF IN TEACHER EXPRESSION

One of the most important questions this chapter considers is whether or not teachers believe in teacher and/or student expressive behavior with regard to the discussion of social issues in the classroom. Do teachers have a clear conception of what their position in the classroom should be vis-a-vis social issues? Should the teacher feel free to express his opinions on any given issue?

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[6]Harmon Zeigler, op. cit., p. 116.

TABLE 7

ISSUES WHICH SHOULD NOT BE DISCUSSED
(BY SEX OF TEACHER)

	Percent of Teachers Who Feel They Should Not Discuss the Listed Topics		
		Sex of Teacher	
Issues	Total Sample	Male	Female
Federal Aid to Education	5%	4%	7%
Race Relations & Integration	2	2	2
Marriage & Family Relations	7	8	7
LSD & "Pot"	3	3	4
Communist Ideology	5	5	5
Management-Labor Relations	7	5	9
Railroad Baron Era	14	10	18
Pornography & Its Control	20	19	21
Biological Evolution	15	12	19
Birth Control	28	23	33
Censorship	2	2	1
Vietnam	2	2	2
Artificial Insemination of Human Beings	47	39	57
N =	489	262	226

A second important concern was how teachers view the student's role in the examination of social controversy. Do

teachers allow or encourage student expressive behavior within the classroom? Both of these areas were considered important in gaining a comprehensive picture of the classroom.

Development of Scales: Belief in Student Expression and Belief in Teacher Expression

The questionnaire included a number of attitudinal items, and each teacher was asked to respond to these items with "strongly agree," "somewhat agree," "somewhat disagree," or "strongly disagree." A factor analysis using varimax rotation was performed on teachers' responses to the attitudinal items. Three factors emerged from this analysis. One factor appeared to measure belief in teacher expression in the classroom, a second factor appeared to measure belief in student expression, and the third factor appeared to measure belief in traditional sociopolitical values. The first two factors are reported in this chapter. The third factor labeled "Belief in Traditional Sociopolitical Values" is examined in Chapter III of this report. The attitudinal items which loaded heavily on the two factors reported in this chapter are as follows:

A. Factor One (Belief in Teacher Expression)

Questionnaire Items	Loading
(1) Reveal own opinions supported by reasons before unit of study is finished.	Positive
(2) Keep own opinions hidden under any and all circumstances.	Negative
(3) The teacher should remain neutral to be objective.	Negative
(4) The teacher can take a position and be objective too.	Positive

B. Factor Two (Belief in Student Expression)

Questionnaire Items	Loading
(1) All ideas should be publicly defended.	Positive
(2) Reasons for opinions should be discussed openly.	Positive
(3) I feel that students should participate in class discussion every day.	Positive
(4) Students should be encouraged to voice their opinions on all subjects.	Positive

A positive teacher response to the questionnaire statement "Reveal own opinions supported by reasons before unit of study is finished" indicates that the teacher considers the classroom a legitimate forum for the expression of grounded personal opinions. The teacher with a negative response to the item, "Keep own opinions hidden under any and all circumstances," again seems to reflect a stance in favor of teacher classroom expression. The belief that a teacher can be objective without being silent concerning controversial issues also reinforces the concept of the classroom as a place for the expression of ideas. A logical examination of the items loading heavily on this factor suggests that we measured the teacher's position regarding belief in teacher expression in the classroom.

Responses to the second set of items indicate the degree to which a teacher feels that students should play a strong participatory role in the discussion of controversial topics. Teachers who respond positively to these items seem to believe strongly that students should be actively involved in classroom discussion of issues.

The items in Factor One were used to construct a scale called "Belief in Teacher Expression" (BTE), while the items listed under Factor Two were used to construct a scale titled "Belief in Student Expression" (BSE).

For purposes of further analysis, the teachers in the sample were sub-divided into three groups--those falling in the lower one-third of a scale on the two factors were identified as the low group (i.e., those having low belief in teacher or student expression), those in the middle one-third were the medium group, and those in the upper one-third were labeled the high group.

DEMOGRAPHIC PROFILE OF TEACHERS WITH EXPRESSIVE ORIENTATIONS

This chapter investigates a range of demographic variables as they relate to high or low BSE[7] or BTE[8] teachers. Demographic items included number of years teaching, subject area, undergraduate major, college attended, sex, and type of community.

Type of Community

Researchers have suggested that type of community does have an important relationship to both student and teacher classroom expression. This is the kind of relationship we wanted to explore further in our study.

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[7] BSE stands for Belief in Student Expression.

[8] BTE stands for Belief in Teacher Expression.

Our data indicate that there is no significant relationship (at the .05 level) between community size and BSE groups or between community size and BTE groups. This finding is in contrast to an earlier report by Jennings and Zeigler, which found that community size was related to teacher expression.[9] Our finding of no significant differences in either BSE or BTE groups on the basis of community size contrasts sharply with relevant research conducted in the past which indicated less expressive behavior on the part of rural or small-town populations than that of urban dwellers.[10]

Number of Years Teaching

The findings for the total sample of teachers indicate that the teachers with more than five years of teaching were less committed to discussion of social issues than younger teachers, with the high peak of commitment occurring in the 4-5 year range. On the basis of this finding, one might speculate that teachers with a high belief in student and teacher expression would have taught five years or less. It might also be expected that low BSE teachers and low BTE teachers would be the more experienced teachers.

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[9] M. Kent Jennings and Harmon Zeigler, "Political Expressivism Among High School Teachers: The Intersection of Community and Occupational Values" (Paper to appear as chapter in a book on political socialization to be edited by Roberta S. Sigel and published by Random House), p. 9.

[10] Elmo Roper (New York: 30 Rockefeller Plaza, Unpublished tabulations in files).

The findings on number of years teaching by BSE and BTE groupings were not consistent. An analysis of variance for BSE groups by number of years teaching produced an F-Ratio of 4.12, significant at the .05 level and a t-Ratio[11] of 2.73, significant at the .01 level. This means that the more years a teacher has been teaching the less likely he is to have a high BSE score. This finding is compatible with the hypothesis of the study that the majority of the more experienced teachers would fall into the low BSE group. However, analysis of BTE groups by number of years teaching does not indicate any significant differences, with an F-Ratio of 1.27 and a t-Ratio of -1.38. Why belief in high student expression should decrease with number of years teaching without a corresponding influence on belief in teacher expression is puzzling. Possibly this finding is a reflection of disillusionment on the part of more experienced teachers who no longer believe in the ability of students to contribute constructively to class discussion. With further analysis, we might find the more experienced teachers are also the older teachers. If so, the consequent differences in belief in student expression might be explained by the type of training these teachers received in college.

Area of Primary Interest

The analysis for the total sample indicated that social studies teachers were the most committed to social issues discussions. Table 8 indicates that area of primary interest

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[11] t-Ratio calculated for low and high groups.

is also related to BSE groups. When teachers are grouped by area of primary interest, findings indicate that social studies teachers tend to have a much higher belief in student expression than biology or English teachers. This finding might be explained as follows: Perhaps social studies teachers feel students should participate more in class because they feel social problems can be examined fruitfully only in an open dialogue classroom. Possibly course content and teaching materials in the social studies provide more opportunities for open examination of social controversy. Since, according to the findings of this study, social studies teachers are more committed to the discussion of social controversy, it may not be too surprising that of the types of teachers investigated, social studies teachers are the most in favor of student expression. However, are of primary interest did not have a significant relationship to BTE groupings.

TABLE 8

BELIEF IN STUDENT EXPRESSION
(BY AREA OF PRIMARY INTEREST)

Teacher stated area of primary interest	N	BSE GROUPS Low	Medium	High	
Biology	59	27%	34%	39%	100%
English	158	34	30	36	100
Social Studies	151	17	38	44	100
N =	368	96	125	147	

Chi Square = 14.81 (.01 level of significance)

Other Demographic Variables

Other demographic variables investigated--such as sex of teacher, whether or not a teacher lived in the community in which he taught, undergraduate major, and size of college from which the teacher graduated--were not significant for either BSE groups or BTE groups. The data indicated that neither level of education (whether or not advanced study was undertaken) nor college attended had any significant influence on BSE or BTE groupings. The results for tenure status were mixed with no significant differences for BSE groups, but significant at the .01 level, for BTE groups. Possibly teachers do not feel threatened or accountable for opinions expressed by students in the classroom, but feel personally more expressive when they have job security in a tenured position.

DISCUSSION OF SOCIAL ISSUES BY EXPRESSIVE TEACHERS

Several hypotheses were concerned with the amount of classroom time given to issues, the type of issues discussed, etc. Do teachers with a high belief in student expression spend more time discussing social issues? Does belief in student or teacher expression make a difference in the number of issues considered acceptable for class discussion? These and similar questions were the focus of this analysis.

Time Spent Discussing Social Issues

Time spent discussing controversial social issues is not significant for BTE groups (chi square 3.93). It appears that

high BTE teachers do not necessarily spend any more class time discussing social issues than low BTE teachers.

Table 9 makes it clear that high BSE teachers do devote more class time to issue discussion when compared to low BSE teachers.

TABLE 9

BELIEF IN STUDENT EXPRESSION
BY TIME SPENT DISCUSSING CONTROVERSIAL SOCIAL ISSUES

Percent of teaching time spent discussing controversial social issues	N	BSE GROUPS Low	Medium	High
0 - 10%	245	63%	51%	46%
10 - 25	165	28	37	39
25 -100	58	09	12	15
N =	468	123	164	181

Chi Square = 9.49 (.05 level of significance)

t-Test Between Low and High Groups = 3.67 (.01 level of significance)

Fifteen percent of high BSE teachers discuss controversial issues more than 25 percent of class time. This finding compares with about 12 percent for the total sample of teachers who spent more than 25 percent of class time discussing controversial issues. Possibly high BSE teachers want to maximize student participation and involvement and feel social issues discussion will help accomplish this goal.

Willingness to Discuss All Issues

One might assume that teachers who have a high belief in student expression might also be more willing to discuss all of the social issues than low BSE teachers. Table 10 indicates that this hypothesis is substantiated by the data. The high BSE teachers are significantly more willing to discuss all issues than the low BSE teachers. Thirty-one percent of the low BSE teachers are willing to discuss all issues; this finding compares with 42 percent of the total sample of teachers who were willing to discuss all issues. There is no significant difference between the high BTE teachers and low BTE teachers in their willingness to discuss all issues.

TABLE 10

BELIEF IN STUDENT EXPRESSION AND
BELIEF IN TEACHER EXPRESSION
BY WILLINGNESS TO DISCUSS ALL SOCIAL ISSUES

	BSE GROUPS				
Percent of	Low	Medium	High	Chi	t-Test Between Low and High Groups
teachers in each group who would discuss all listed issues in the classroom	31%	48	45	9.15**	2.45*
	BTE GROUPS				
	Low	Medium	High	Chi	t-Test Between Low and High Groups
	38%	41	47	2.74	1.58

* .02 level of significance
** .01 level of significance

Issues Which Should Not Be Discussed

It could be hypothesized that a higher percentage of high BSE teachers would not only be more willing to talk about all topics, but would consider fewer topics forbidden in the classroom. One may recall in the analysis for the total sample of teachers, the highly controversial, sex-related topics were avoided by many teachers, especially females.

Table 11 indicates that high BSE teachers are significantly more willing than low BSE teachers to discuss the sex-related topics, "marriage and family relations," "pornography and its control," "birth control," and "artificial insemination of human beings." This finding supports our hypothesis that high BSE teachers are more willing to discuss the "hottest" issues. In the case of artificial insemination of human beings, 46 percent of the high BSE teachers still feel they should not discuss this issue; however, if we eliminate this issue from consideration, over 82 percent of the high BSE teachers will discuss all of the other issues. It is possible that teachers feel more hesitant to discuss "artificial insemination of human beings" because they feel less qualified to deal with this topic than with the others. Other reasons might be lack of personal preparation for discussion of the topic and/or failure to see its relevance to their subject field.

TABLE 11

BELIEF IN STUDENT EXPRESSION
BY ISSUES WHICH SHOULD NOT BE DISCUSSED

Issues	BSE GROUPS(a) Low	Medium	High	Total N	Chi
Federal Aid to Education	05%	04%	07%	459	1.63
Race Relations & Integration	03	01	01	461	3.72
Marriage & Family Relations	17	03	04	461	22.33**
LSD & "Pot"	02	03	04	461	.50
Management-Labor Relations	11	06	07	461	3.03
Communist Ideology	07	05	04	461	1.89
Railroad Baron Era	19	12	12	461	3.44
Pornography & Its Control	31	15	18	461	12.01*
Biological Evolution	16	17	13	461	.91
Birth Control	39	25	24	461	9.26*
Censorship	01	01	03	461	2.02
Vietnam	01	03	02	461	1.91
Artificial Insemination of Human Beings	61	40	46	462	12.52*

* .01 level of significance
** .001 level of significance
(a) Percent of teachers in each group who feel they should not discuss a given issue.

Table 12 lists the issues which BTE groups feel should not be discussed. There is a significant difference for only

the biological evolution issue. Apparently low BTE teachers are as willing to express their positions on issues as high BTE teachers.

TABLE 12

BELIEF IN TEACHER EXPRESSION
BY ISSUES WHICH SHOULD NOT BE DISCUSSED

Issues	BTE GROUPS(a) Low	Medium	High	Total N	Chi
Federal Aid to Education	03%	07%	05%	459	1.43
Race Relations & Integration	02	02	01	461	2.22
Marriage & Family Relations	10	08	05	461	3.22
LSD & "Pot"	03	03	03	461	0.01
Management-Labor Relations	08	06	08	461	.72
Communist Ideology	07	06	04	461	1.54
Railroad Baron Era	14	13	15	461	.56
Pornography & Its Control	25	20	17	461	2.97
Biological Evolution	08	22	14	461	10.44*
Birth Control	32	29	25	461	1.85
Censorship	01	03	01	461	3.23
Vietnam	02	01	03	461	.85
Artificial Insemination of Human Beings	53	49	44	462	2.81

* .01 level of significance.
(a) Percent of teachers in each group who feel they should not discuss a given issue.

Again, this finding is consistent with previous tables reported, where high belief in student expression appears to be much more related to other variables than high belief in teacher expression.

Type of Materials Ordinarily Used When Teaching Social Issues

Another concern of this study was the type and quality of materials used by a teacher in class discussions of controversial issues. Our hypothesis was that the selection of materials will reflect a teacher's commitment to in-depth issue discussion. More specifically, we hypothesized that both high BSE and high BTE teachers would (a) not rely on a single textbook as the only source of authority, (b) use a wider variety of materials than low BSE and low BTE teachers, and (c) be more willing than the low BSE and low BTE teachers to use the materials which reflect extreme positions on an issue.

Table 13 indicates that belief in student expression is related to the types of materials used when in the discussion of controversial issues. High BSE teachers use more types of materials than low BSE teachers. When discussing population planning, high BSE teachers are significantly more willing to use four of the eleven sources of materials than low BSE teachers. Materials which are somewhat polemical or from controversial sources such as, papers critical of the over-emphasis on population control, books and pamphlets published in foreign countries regarding family planning, are used significantly more frequently by high BSE teachers than by low BSE teachers.

TABLE 13

BELIEF IN STUDENT EXPRESSION GROUPS
BY TYPES OF MATERIALS USED IN THE CLASSROOM

MATERIALS ORDINARILY USED	BSE GROUPS(a)			Total	
A. Population Planning	Low	Medium	High	N	Chi
Studies analyzing the population explosion, family planning, and birth control.	68%	80%	86%	462	14.92***
Books and pamphlets published in foreign countries regarding national family planning.	39	46	56	462	8.51****
Material produced by independent non-profit organizations such as Planned Parenthood.	72	72	77	462	1.37
Standard texts.	65	68	70	462	.80
Material produced by pressure groups such as the Population Crisis Committee.	30	35	39	462	2.87
Material prepared by religious organizations such as the Catholic Church.	45	49	57	462	4.99
Reprints from popular magazines such as Time.	63	72	77	462	7.53*
Reprints from Congressional hearings such as those held by Senator Gruening's Committee.	41	47	43	462	1.37
Material produced by government agencies such as The Children's Bureau and Bureau of Family Services in H.E.W.	69	63	66	462	.94

although teachers in the low BTSV group reported spending more time discussing controversial issues (57 percent said they devote 10 percent or more of their classroom time to these issues) than teachers in the medium or high BTSV groups (43 percent reported spending 10 percent or more of their classroom time discussing issues), the relationship between BTSV groups and the reported time spent discussing controversial issues is not significant.

TABLE 1

TIME SPENT DISCUSSING CONTROVERSIAL ISSUES

Percent of class time spent discussing controversial issues	N	BTSV GROUPS Low	Medium	High
0 - 10%	245	43%	58%	57%
10 - 25	165	42	32	32
25 - 50	42	12	8	7
50 -100	16	3	3	4
		100%	100%	100%
Total N = 468		159	149	160

Chi Square - 8.35 (not significant)

Thus, for the two quantitative measures, "number of issues discussed" and "time spent discussing controversial issues," there is no significant difference between the BTSV groups. All groups reported discussing approximately the same number of issues and spending a similar portion of

TABLE 13 (cont.)

MATERIALS ORDINARILY USED	BSE GROUPS(a)			Total	
A. Population Planning	Low	Medium	High	N	Chi
Papers critical of the over-emphasis on population control.	31%	45%	50%	462	10.68**
Material written by distinguished population scholars.	58	64	71	462	5.33
B. Communism					
Standard textbooks.	81	80	79	463	.21
Original Communist sources (e.g., the Communist Manifesto).	68	77	82	464	7.76*
Books and pamphlets published in the Soviet Union.	44	44	60	464	11.44**
Material produced by such organizations as the American Legion.	36	43	47	464	3.74
Material prepared by such organizations as the John Birch Society.	33	37	44	464	3.95
Material produced by the American Communist Party.	38	41	50	463	5.28
Material written by distinguished American scholars.	86	86	91	464	2.70
Material written by distinguished Soviet scholars.	78	80	86	464	3.81
Material developed by professional educational associations.	61	66	75	464	6.95*

* .05 level of significance
** .01 level of significance
*** .001 level of significance
**** .02 level of significance

(a) Percent of teachers in each group who ordinarily use a given type of material.

The findings for materials ordinarily used when teaching about communism are even more interesting. High BSE teachers are apparently much more convinced of the validity of utilizing original communist sources and Soviet books and pamphlets when discussing communism than low BSE teachers. It also appears that high BSE teachers are more willing than low BSE teachers to use non-USA materials in the study of communism. A previous study found that school board members and superintendents agreed that such topics as, the free enterprise system, democracy, and communism should be treated objectively; but, at the same time, they felt that the teachers should convey an understanding of the "superiority of the American way of life in all things" when these topics were studied.[12]

Of course without visiting the actual classrooms, it is impossible to determine if the materials are being used in a reflective manner, but even the willingness to have students use a wider variety of materials indicates some movement away from strict indoctrination.

There were no significant differences in the use of materials by BTE groups. The data indicate that there is no relationship between a teacher's belief in expression and his choice of classroom materials for discussing controversy. Apparently high or low belief in teacher expression is not a significant factor in the choice of classroom materials.

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[12]Neal Gross, Who Runs Our Schools (New York: John Wiley & Sons, Inc., 1958), p. 195.

SUMMARY OF FINDINGS REPORTED IN CHAPTER II

The image of the sanction-prone teacher afraid of discussing controversial issues has been brought into serious question by our data. Eighty percent or more of the teachers in our sample are willing to discuss 10 of the 13 issues presented. When teachers do avoid controversial issues, they indicate that they do so because of considerations such as pertinency to subject matter, maturity of the class, or personal factors rather than fear of administrative or community disapproval. Of course, it is possible that teachers actually are concerned about community, administrative and parental pressure, but feel that answering the questions in terms of pertinency to subject matter, and the like, is more intellectually defensible. An equally plausible explanation is that community and administrative norms have changed regarding social issues. Possibly the teachers' seeming lack of concern for sanctioning agents reflects a growing feeling on the part of administrators and the concerned public that social issues constitute a legitimate domain of educators and should be discussed openly in the classroom.

A single demographic profile of the social issues teacher does not emerge from the data. More years of teaching diminishes a teacher's willingness to discuss social issues, but new teachers are also unwilling to discuss some issues. Possibly, if beginning teachers were better prepared in the skills required for successful inquiry into value issues, they would

discuss more issues in their classrooms.

The type and variety of materials used by high BSE teachers suggest that belief in student expression might be a desirable attitude to develop in teachers. If so, the question is how can high belief in student expression be fostered. Our data certainly do not provide any easy answers. Teachers in the social studies field appear to have the highest belief in student expression, but why? Perhaps a "type of person" who has high belief in student expression is attracted to social studies, rather than something inherent in the social studies promoting high belief in student expression. More investigation is needed to sort out these relationships.

Teachers' diminishing concern with sanctioning agents and the general public's increasing concern with social issues may create the conditions which allow the school to move explicitly into the area of value examination. If so, college educators, particularly, have a growing responsibility to provide the training teachers will need to have for meaningful instruction in social issues and value controversies.

CHAPTER III

BELIEF IN TRADITIONAL SOCIOPOLITICAL VALUES AND THE DISCUSSION OF SOCIAL ISSUES

The United States is experiencing a revolution in the values that people hold toward the social and political systems. The activist movement of youth and its attendant demands for a larger share in decision-making, for a redefinition of the role of women in society, for increasing the tempo of social and ethnic integration are some manifestations of this revolution. Time-honored concepts of right and wrong are under constant attack. As educational institutions at all levels become involved in this conflict of values, the critical examination of controversial social issues in the schools takes on particular importance for society as a whole.

Rational examination of social issues involves, among other things, the ability of an individual or group to consider divergent social and personal values, gather and process conflicting data, and separate fact from opinion. In a period of overt social conflict and controversy, it is imperative that teachers be able to utilize and help their students develop these critical thinking skills. Application of these skills in the classroom requires openness and flexibility on the part of all the participants, a willingness to explore all points of view, to examine publicly personal belief systems, and to search continually for relevant evidence.

As we mentioned in the opening chapter, studies related to the examination of controversial social issues in the schools have generally emphasized the influence of pressure groups and movements as well as school and community relations regarding academic freedom.[1] There has been very little investigation of the relationship between teachers' attitudes toward sociopolitical values and the teaching of controversial social issues. The purpose of this phase of the study was to determine whether, in the discussion of social issues, teachers who have a strong belief in traditional sociopolitical values differ significantly on various dimensions from teachers who have a low belief in traditional sociopolitical values.

Since teachers who have a high belief in traditional sociopolitical values are essentially in a defensive position in the current value revolution, it seems probable that they would be reluctant to discuss some social issues and would have a tendency to limit the critical examination of others. In this study we hypothesized that teachers with a high belief in traditional sociopolitical values (these are generally narrow and parochial views regarding the relationship of youth to their society) would (a) be more reluctant to discuss all social issues, (b) use fewer resources and materials

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[1]John P. Lunstrum, "The Treatment of Controversial Issues in Social Studies Instruction," New Challenges in the Social Studies: Implications of Research for Teaching, eds., B.G. Massialas and F.R. Smith (Belmont, California: Wadsworth Publishing Company, 1965), pp. 121-153.

when discussing a given issue, and (c) have more difficulty distinguishing fact from opinion than teachers with a low belief in traditional sociopolitical values. The chapter also explores various demographic variables which were hypothesized to be related to teachers' belief in traditional sociopolitical values.

Belief in Traditional Sociopolitical Values

The data analyzed in this chapter were taken from the Michigan Social Issues Teacher Questionnaire mailed to biology, English, and social studies teachers in a probability sample of secondary schools (grades 7-12) in the state of Michigan. (See Appendix I for a description of the sampling procedure and Appendix II for a copy of the questionnaire.)

To obtain an index of a given teacher's belief in traditional social and political values, the questionnaire included a number of statements which expressed rather narrow views toward youth, the role of education as a social institution, and the American system of government as a world model. Each teacher was asked to respond to these statements with "strongly agree," "somewhat agree," "somewhat disagree," or "strongly disagree." A factor analysis, using varimax rotation, was performed on teacher responses to these items. The statements which loaded heavily on the factor which we operationally designated as "belief in traditional sociopolitical values" are as follows:

	ITEM	LOADING
(1)	The main purpose of social studies courses is to teach students to be good and loyal citizens.	Positive
(2)	Obedience and respect for authority are the most important virtues children should learn.	Positive
(3)	Young people should not have too easy access to questionable literature.	Positive
(4)	The American system of government is one that all nations should have.	Positive
(5)	A teacher has a responsibility to see that students develop the correct values.	Positive

The attitudes reflected in these statements express rather limited and parochial views on the role of the school in the socialization of youth. For example, the statement, "The main purpose of social studies courses is to teach students to be good and loyal citizens," is an assertion which may be found in many past lists of the aims of the social studies. This position excludes the concept of activism and involvement in social change as part of the role of the good citizen. The view that "The American system of government is one that all nations should have" is very ethnocentric and was more prevalent in earlier historical periods than today. As we are acquiring a more comprehensive international perspective, we are realizing that the needs of other nations are different from ours, and that our form of government may not be appropriate for other nations. The statement, "Young people should not have too easy access to questionable literature," is

reflective of narrow Victorian attitudes toward sex and implies little faith in the ability of young people to question the values of their society. To agree that "Obedience and respect for authority are the most important virtues children should learn" is to agree with the classic concept of the role of children who are expected to exhibit compliant rather than participatory behavior. The person with a high belief in these values assumes adults know better than children what is right and good. He is apt to agree with the statement that "A teacher has a responsibility to see that students develop the correct values" not only because he thinks correct values as such exist but also because he feels that the teacher, as an adult authority figure, would know better than his students what these correct values are.

Since all of the items above loaded heavily on a single factor and since all of these statements reflect narrow and parochial sociopolitical views, we used them to develop a scale entitled, "Belief in Traditional Sociopolitical Values," (BTSV). The higher a teacher's score on this scale, the stronger his belief in traditional and sociopolitical values. (See Appendix III for a description of the method used to calculate a teacher's position on the BTSV scale.) For purposes of further analysis, the teachers in the sample were sub-divided into three groups--those falling in the lower one-third of the scale were identified as the low group, those in the middle one-third were identified as the medium

group, and those in the upper one-third were identified as the high group.[2]

DISCUSSION OF SOCIAL ISSUES IN THE CLASSROOM

A major hypothesis of this study is that teachers who have a high belief in traditional sociopolitical values, as measured by a high score on the BTSV scale, would differ significantly from teachers with a low belief in traditional social values on several measures related to the classroom investigation of social issues. We were interested in both quantitative and qualitative measures. Based on teacher self-reports, for instance, do the BTSV groupings differ in the amount of time they spend discussing social issues, or is it the more qualitative dimensions, such as type of issue discussed, use of source materials, or nature of the classroom interaction which distinguish the BTSV groupings?

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[2]It is important to point out how the BTSV scale in this study differs from the California F-Scale or Rokeach's dogmatism scale. Both the California F-Scale and Rokeach's dogmatism scale attempt to measure the total belief system of an individual. The F-Scale purports to measure general authoritarianism. The dogmatism scale is designed to measure individual differences in the extent to which belief systems are open or closed. Although the BTSV scale undoubtedly measures aspects of authoritarianism and dogmatism tapped by the California and Rokeach scales, it is not designed to measure a total personality belief system, but concentrates instead on one aspect of an individual's belief system--his belief in traditional sociopolitical values. The BTSV scale was devised on the premise that traditional sociopolitical attitudes are particularly relevant to an analysis of classroom discussion of social issues. But only to the degree that any given sub-set of beliefs are part of a larger, integrated individual belief system, is the BTSV scale reflecting dimensions similar to those measured by the California F and dogmatism scales.

Time Spent and Number of Issues Discussed

The two quantitative measures used in this study to characterize discussion of social issues in the classroom were developed from a series of questions pertaining to the number of social issues the teachers said they discussed in the classroom and the time they reported spending on issues which they regarded as controversial.

Specifically, the teachers were given a list of thirteen social issues and asked if they had discussed one or more of the issues in the last month.[3] There was no significant difference between the responses of the BTSV groups on this variable. Ninety-one percent of the low BTSV group indicated that they had discussed one or more of the issues in the last month while 88 percent of the high BTSV group indicated that they had discussed one or more of the issues. When asked to indicate the total number of issues they ordinarily discuss and the total number of issues discussed during the past month, the groups showed no significant differences.

The teachers were also asked to state the percent of class time they ordinarily spent discussing issues which they considered controversial. The data in Table 1 indicate that

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[3]Table 2 lists the topics which were included. Three of these topics (Management-Labor Relations, Federal Aid to Education, and the Railroad Baron Era) were considered relatively non-controversial by the investigators and also ranked as relatively non-controversial by the teachers in the study.

although teachers in the low BTSV group reported spending more time discussing controversial issues (57 percent said they devote 10 percent or more of their classroom time to these issues) than teachers in the medium or high BTSV groups (43 percent reported spending 10 percent or more of their classroom time discussing issues), the relationship between BTSV groups and the reported time spent discussing controversial issues is not significant.

TABLE 1

TIME SPENT DISCUSSING CONTROVERSIAL ISSUES

Percent of class time spent discussing controversial issues	N	BTSV GROUPS Low	Medium	High
0 - 10%	245	43%	58%	57%
10 - 25	165	42	32	32
25 - 50	42	12	8	7
50 -100	16	3	3	4
		100%	100%	100%
Total N =	468	159	149	160

Chi Square - 8.35 (not significant)

Thus, for the two quantitative measures, "number of issues discussed" and "time spent discussing controversial issues," there is no significant difference between the BTSV groups. All groups reported discussing approximately the same number of issues and spending a similar portion of

their class time doing so. These quantitative measures, though, give no indication of the quality of the investigation of social issues in the classroom. From these measures, for example, one does not know what specific issues are being discussed or not discussed, what materials are being used, or anything about the style of the discussion. The remainder of this paper concentrates on various measures related to some of these qualitative aspects.

Topics Which Should Not Be Discussed

One of the hypotheses in this study is that teachers with a high belief in traditional sociopolitical values would be reluctant to discuss a range of specified social issues. This hypothesis is premised on the belief that, instead of making available all topics for possible classroom discussion, teachers who score high on the BTSV scale tend to limit the range of social issues discussed, dismissing those issues which they do not think are appropriate for their class.

To test this hypothesis, the teachers in the study were given a list of social issues and were asked to indicate those which they felt should not be discussed in the classroom. The topics included in the questionnaire are listed in Table 2 along with the percent of individuals in each of the BTSV groups who felt that the topic should not be discussed in the classroom.

The data in Table 2 indicate that teachers with a low belief in traditional sociopolitical values are, in general,

TABLE 2

TOPICS WHICH SHOULD NOT BE DISCUSSED IN THE CLASSROOM

Topics	BTSV GROUPS(a) Low	Medium	High	Chi
Federal Aid to Education	04%	04%	07%	1.48
Race Relations & Integration	00	02	02	3.73
Marriage & Family Relations	05	09	07	1.71
LSD & "Pot"	01	01	07	10.21**
Management-Labor Relations	04	10	07	3.78
Communist Ideology	02	08	06	6.23*
Railroad Baron Era	08	19	16	7.04*
Pornography & Its Control	17	22	22	1.80
Biological Evolution	13	19	15	1.97
Birth Control	28	26	31	1.23
Censorship	00	03	02	5.27
Vietnam	01	03	02	2.14
Artificial Insemination of Human Beings	37	48	58	14.27***

* .05 level of significance
** .01 level of significance
*** .001 level of significance

(a) Percent of teachers in each BTSV group who feel they should not discuss a given topic.

more willing to discuss any given topic than those teachers with a high belief in these values, but that the difference between the groups is significant only for four of the thirteen topics. Teachers in the low BTSV group are significantly

more willing than teachers in the high BTSV group to discuss "LSD and Pot," "communist ideology," the "Railroad Baron Era," and "artificial insemination of human beings." It is interesting to note that these topics vary considerably in their controversial nature. The Railroad Baron Era, an issue from the past, was identified by the teachers as a completely non-controversial topic, while "communist ideology" was identified as a moderately controversial topic, and "LSD and Pot" and "artificial insemination of human beings" as extremely controversial topics. Since the BTSV groups did not differ significantly in their reluctance to discuss other topics such as "biological evolution" and "birth control," (also considered highly controversial), it appears that the overt controversial nature of a topic is not the main factor operating to cause the teachers in the high BTSV group to be reluctant to discuss a topic.

From responses to other items on the questionnaire regarding reasons the teachers give for not discussing certain issues, we find that teachers who score high on the BTSV scale have a greater tendency to state that a given issue is not pertinent to their class and therefore should not be discussed. Evidently, teachers who score high on the BTSV scale are willing to discuss social issues as long as they think the issue is pertinent and are able to control the specific issues discussed. It is also important to note that the overt controversial nature of a topic is not necessarily

related to whether or not the issue is actually presented as a controversial issue in the classroom. For example, a discussion of birth control, (identified by the teachers as a very controversial topic) could focus on descriptions of birth control programsthroughout the world and ignore related value issues, such as the sanctity of personal privacy and the conception of human life. It is quite possible for a teacher to discuss topics which are overtly highly controversial in a very safe, straight-forward, bland fashion.

The teachers were also asked if they would be willing to discuss all of the topics listed. On this item there was a significant difference (chi significant at .01 level) between BTSV groups. Fifty-three percent of the teachers with a low belief in traditional sociopolitical values said they would discuss all of the topics in their classroom, while only 36 percent of the teachers with high scores on the BTSV scale indicated that they would be willing to discuss all of the topics listed. Since teachers with a high belief in traditional sociopolitical values specify more issues which they feel should not be discussed in the classroom, they may have more set ideas than low BTSV teachers about what should be discussed and what should not be discussed. High BTSV teachers may limit their students' freedom to bring up and delve into specific topics.

Use of Materials

In order to examine social issues critically and to make considered judgments about relevant social action, it

is important that students and teachers investigate differing points of view and be willing to utilize and analyze all relevant sources of information. Several writers have observed that teachers have been lax in their use of a variety of classroom materials, i.e., teachers rely on information almost exclusively from standard texts.[4] This reliance on standard texts has important ramifications for the study of social issues. Standard texts tend to ignore controversial issues, or if they deal with a topic, they do so in an "antiseptic" and uncritical manner.[5]

The investigators were interested in finding out whether or not a teacher's belief in traditional sociopolitical values affected his selection and use of materials in the classroom. Teachers were given a list of types of materials on two topics, population planning and communism, and they were asked to indicate which ones they would ordinarily use in the classroom. In Table 3, the percentage of teachers who responded that they would ordinarily use a given type of material is summarized by BTSV groups.

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[4]See John R. Palmer, "Selection and Use of Textbooks and Audio-Visual Materials," New Challenges in the Social Studies, eds., B.G. Massialas and F.R. Smith (Belmont, California: Wadsworth Publishing Company, Inc., 1965), pp. 155-184.

[5]C. Benjamin Cox and Byron G. Massialas (eds.), Social Studies in the United States: A Critical Appraisal (New York: Harcourt, Brace and World, Inc., 1967).

TABLE 3

TYPES OF MATERIALS USED IN THE CLASSROOM

MATERIALS ORDINARILY USED	BTSV GROUPS (a)			Total N	Chi
	Low	Medium	High		
A. Population Planning					
Studies analyzing the population explosion, family planning, and birth control techniques.	80%	81%	78%	462	.59
Books and pamphlets published in foreign countries regarding national family planning.	58	41	44	462	10.24**
Material produced by independent non-profit organizations such as Planned Parenthood.	73	73	75	462	.18
Standard texts.	67	69	69	462	.14
Material produced by pressure groups such as the Population Crisis Committee.	47	36	22	462	21.57***
Material prepared by religious organizations such as the Catholic Church.	56	51	47	462	2.18
Reprints from popular magazines such as Time.	78	74	63	462	8.43*
Reprints from Congressional hearings such as those held by Senator Gruening's Committee.	49	44	38	462	3.37
Materials produced by government agencies such as The Children's Bureau and Bureau of Family Services in H.E.W.	72	69	57	462	8.24*

TABLE 3 (cont.)

MATERIALS ORDINARILY USED	BTSV GROUPS (a) Low	Medium	High	Total N	Chi
A. Population Planning					
Papers critical of the over-emphasis on population control.	50%	48%	33%	462	10.46**
Material written by distinguished population scholars.	73	67	56	462	10.22**
B. Communism					
Standard textbooks.	78	80	82	463	.87
Original Communist sources (e.g., the Communist Manifesto.)	84	77	68	464	11.46**
Books and pamphlets published in the Soviet Union.	65	47	38	464	24.22***
Material produced by such organizations as the American Legion.	45	38	45	464	2.09
Material prepared by such organizations as the John Birch Society.	51	34	29	464	17.05***
Material produced by the American Communist Party.	57	44	31	463	22.81***
Material written by distinguished American scholars.	82	84	79	464	1.53
Material written by distinguished Soviet scholars.	74	70	61	464	7.05*
Material developed by professional educational associations.	90	86	88	464	1.23

* .05 level of significance
** .01 level of significance
*** .001 level of significance
(a) Percent of teachers in each BTSV group who ordinarily use a given type of material.

From the data presented in Table 3, it is apparent that a teacher's probable use of a given material, in a number of instances, is strongly related to his belief in traditional sociopolitical values. In the unit on communism, although there is very little difference between low and high BTSV groups in the use of standard texts and materials from veterans' groups, American scholars, or professional education associations, there is a significant difference in the teachers' inclination to use all other materials. The teachers with a low belief in traditional sociopolitical values are much more willing than those with a high belief to use such materials as original communist sources, Soviet books and pamphlets, and writings by Soviet scholars, which may present a different and possibly favorable picture of communism. Low BTSV teachers also are more willing to use biased sources from "both sides," so to speak, such as materials produced by the American Communist Party or anti-communist organizations, which represent extreme positions on communism. The latter materials are no doubt harder to obtain and require more skill in utilization than the former. Evidently, teachers with a high belief in traditional socio-political values are either less willing to take the time and effort required to obtain these materials or, because they view materials presenting extreme positions or favorable views of communism as unsafe, they are unwilling to utilize them in the classroom.

These conclusions are supported by the findings regarding use of materials in a population planning unit. There is little difference between the high and low BTSV groups in their probable use of studies analyzing the population explosion, standard texts, Congressional hearings, or materials produced by non-profit organizations, but teachers with high belief in traditional values are much less willing to use all other sources. These teachers are more hesitant to use materials such as those produced by pressure groups, popular magazine authors, and writers critical of population control, all of which may present controversial positions or espouse a one-sided point of view. Although the high BTSV groups are less willing to use materials produced by religious organizations, the difference between the groups is not significant. It may be that materials produced by religious organizations on population planning are considered relatively safe to use.

The reticence of teachers with a high belief in traditional sociopolitical values to use foreign books and pamphlets regarding family planning, materials produced by government agencies, and papers by population scholars may reflect, as with the topic of communism, their unwillingness to spend time obtaining these materials or their belief that these materials are too difficult for their students to understand.

It is apparent from the above data that the teachers with a high belief, as contrasted with those with a low

belief in traditional sociopolitical values (a) contemplate using considerably fewer sources in their study of social issues and, (b) generally, select those materials which do not present controversial viewpoints, are relatively easy to obtain, and are less difficult to interpret and understand. These findings support our original hypothesis that teachers who have a high belief in traditional sociopolitical values limit the search for information on a given issue. This tendency on the part of teachers with high BTSV rankings has important ramifications for the teaching of social issues in the classroom. Evidently students in classrooms with teachers having a high belief in traditional values are being given less of an opportunity to read materials espousing conflicting views and to cope with and interpret relevant scholarly research. If, through the use of an instrument, these teachers can be identified and are given an opportunity to re-examine their classroom performance some corrective measures possibly could be introduced.

Fact and Opinion

In an earlier study it was found that high school teachers are often unable to determine whether a statement is based on fact or on opinion. Their responses to one statement in particular stood out. Forty-two percent of the teachers in the sample indicated that the following statement was a fact: "The American form of government may not be perfect, but it is the best type of government yet devised by man."

It was concluded that the stronger an individual's agreement with values expressed in a statement, the stronger his inclination to accept the statement as fact.[6]

These findings prompted us to include a fact-opinion matrix in the study. Our hypothesis was that the stronger a teacher's belief in traditional sociopolitical values, the more difficult it would be for him to identify opinion statements. The statements included in our study are listed in Table 4. For each of these items, the teachers were asked to indicate whether they thought the statement was "fact," "mostly fact," "mostly opinion," or "opinion."[7] The percent of teachers in each BTSV group who thought a given statement was fact or mostly fact is indicated in Table 4.

Four of these statements, "American troops are presently fighting in Vietnam," "Communism is a political and economic ideology," "All living things reproduce," and "Every known society has had some means of communication," were considered by the researchers to be, in a logical sense, fact statements. As can be seen by the data, the teachers in our study had little trouble recognizing these factual statements. Over

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[6]Harmon Zeigler, The Political World of the High School Teacher (Eugene, Oregon: Center for the Advanced Study of Educational Administration, University of Oregon, 1966), pp. 130-131.

[7]To calculate the t-Ratio shown for the low and high BTSV groups in Table 4, a score of 1 was assigned to the response "fact," 2 to "mostly fact," 3 to "mostly opinion," and 4 to "opinion."

TABLE 4

TEACHERS WHO IDENTIFIED FACT-OPINION STATEMENTS AS FACT

	Percent of Teachers in Each Group Who Said the Statement was Fact or Mostly Fact				
	BTSV GROUPS				t-Test Between Low and High Groups
Statements	Low	Medium	High	Chi	
The participation of the Federal Govt. in local affairs leads to undesirable Federal controls.	17%	25%	31%	22.57***	4.08***
The American form of govt. may not be perfect, but it's the best type of govt. yet devised by man.	26	45	63	61.17***	7.82***
American troops are presently fighting in Vietnam.	99	100	99	5.14	0.20
Communism is evil.	09	21	42	89.06***	8.38***
All American troops should withdraw from Vietnam.	07	04	06	8.13	0.62
The United States ought to expend more Federal funds on solving domestic problems rather than to spend so much on foreign commitments.	15	29	35	28.32***	4.63***

TABLE 4 (cont.)

Statements	Percent of Teachers in Each Group Who Said the Statement was Fact or Mostly Fact				
	BTSV GROUPS				t-Test Between Low and High Groups
	Low	Medium	High	Chi	
Communism is a political and economic ideology.	90%	91%	91%	10.22	0.03
All living things reproduce.	94	94	95	3.65	0.48
Underdeveloped nations of the world should attempt to enter the industrial world.	21	35	29	18.44**	2.90**
Every known society has had some means of communication.	97	98	97	1.90	0.86
Students should be presented with at least the biological aspects of human reproduction.	47	60	67	37.56***	4.71***
All American students should take English throughout their school years.	34	57	59	38.69***	5.39***
All students ought to study literature in order to understand mankind.	29	48	50	33.66***	4.92***
N =	159	147	157		

* .05 level of significance
** .01 level of significance
*** .001 level of significance

90 percent of the teachers in each of the BTSV groups indicated that the statements were fact or mostly fact.

When we look at the opinion statements, however, we see a sharp contrast between the ability of the high and low BTSV groups to identify correctly opinion statements. With the exception of one statement, "All American troops should withdraw from Vietnam," the teacher with a high belief in traditional sociopolitical values are significantly less able to recognize opinion statements. The difference between the high and low BTSV groups is striking and in most cases significant at the .001 level and beyond. For example, only one-fourth of the teachers in the low BTSV group identified the statement, "The American form of government may not be perfect, but it's the best type of government yet devised by man," as fact or mostly fact, while almost two-thirds of the teachers in the high BTSV group thought the statement was fact or mostly fact. The responses to the item, "Communism is evil," shows the same marked contrast between the groups. Nine percent of the low BTSV group as contrasted with 42 percent of the high BTSV group identified this statement as fact or mostly fact.

One would think that the "ought" statements, such as "All American students should take English throughout their school years," included in the questionnaire would be easily identifiable as prescriptive opinion statements, yet, once again, a considerable number of the teachers in our sample could not make the distinction between fact and

opinion. Further, the teachers with a high belief in traditional sociopolitical values were consistently less able than those teachers with a low belief in these values to identify opinion statements.

It is important to note that in this study no effort was made to distinguish those teachers who are politically liberal from those who are conservative. Several of the opinion items such as "Communism is evil" and "The participation of the Federal government in local affairs leads to undesirable Federal controls" reflect conservative values, but other items, such as "Students should be presented with at least the biological aspects of human reproduction," "All American students should take English throughout their school years," and "All students ought to study literature in order to understand mankind," do not have an explicit liberal or conservative political bias. Since the teachers with a high belief in traditional sociopolitical values have a significantly more difficult time than those with a low belief in traditional sociopolitical values recognizing all these statements as opinion, it cannot be ascertained from our data whether or not a teacher's political views affect his score on the BTSV scale or affect his evaluation of whether a statement is fact or opinion.

The finding that teachers with a high belief in traditional sociopolitical values have trouble distinguishing between fact and opinion has serious implications for students in classes taught by teachers with high belief in

traditional values. If these teachers regard opinion assertions as fact, it may be that not only are they not helping their students develop critical thinking skills, but they are actually teaching their students that certain opinion assertions are fact.

SELECTED DEMOGRAPHIC CHARACTERISTICS OF TEACHERS

From items in the questionnaire, the investigators were able to obtain an idea on some of the demographic and personal variables which are related to scores on the BTSV scale. The data indicate that sex, tenure status, type of community in which an individual teaches (e.g., rural or urban), and level of education beyond the Bachelor's degree, do not distinguish between the high and low BTSV teachers. Some of the variables which are significantly related to scores on the BTSV scale, though, are the age of the teacher, whether or not the teacher also lives in the community in which he teaches, the individual's undergraduate major, and the college he attended for his Bachelor's degree.

Undergraduate Major

Brumbaugh, et. al, found that student-teachers in the subject matter areas of mathematics, science, and social studies are more dogmatic than those in foreign language, English, and the fine arts.[8] In view of these

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[8]Robert B. Brumbaugh, Kenneth C. Hoedt, and William H. Beisel, Jr., "Teacher Dogmatism and Perceptual Accuracy," Journal of Teacher Education, 17 (Fall, 1966), p. 335.

and similar findings, the teachers in the present study were asked to indicate their undergraduate major. Although all of the teachers taught either English, social studies, or biology, many had different or more specific academic preparation. This was particularly true of teachers who had majored in a social science, such as political science, in college but were not teaching social studies. Also, a number of social studies teachers were coaches and indicated that physical education was their undergraduate major.

The data presented in Table 5 indicate that there is a significant relationship (at the .01 level) between undergraudate major and belief in traditional sociopolitical values. Those teachers who majored in the natural sciences, physical education, and education tend to have a much higher belief in traditional sociopolitical values than those teachers who majored in the social sciences, English, history, and social studies. Of the social science majors in our study, 58 percent had a low belief in traditional sociopolitical values, while only 16 percent had a high belief in these values. Education and physical education majors showed the reverse pattern; 11 percent of the physical education majors and 25 percent of the education majors were in the low BTSV group while 63 percent and 50 percent, respectively, were in the high BTSV group.[9]

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[9]The number of cases in both the physical education and education categories is quite small, 19 and 12, respectively; this fact should be kept in mind when interpreting the data.

TABLE 5

BELIEF IN TRADITIONAL SOCIOPOLITICAL VALUES BY UNDERGRADUATE MAJOR

Undergraduate Major	N	BTSV GROUPS Low	Medium	High	
Social Sciences	31	58%	26%	16%	100%
Natural Sciences	50	26	38	36	100
English	122	40	34	26	100
History	78	38	33	28	100
Social Studies	32	44	28	28	100
Physical Education	19	11	26	63	100
Education	12	25	25	50	100
Other	38	24	45	32	100
N =	382	138	128	116	

Chi Square = 27.05**

** .01 level of significance

With the exception of the social studies teachers, our findings tend to demonstrate the same pattern as those of Brumbaugh, et. al. Teachers with undergraduate majors in the humanities and social sciences tend to have a less traditional outlook than teachers in the natural sciences. The two sets of findings relative to social studies teachers may reflect the different categories used in the two studies. The categories in the study of Brumbaugh, et. al., included the subjects taught by the student-teachers and did not include education or physical education as separate categories.

In our study, the majority of teachers with undergraduate majors in physical education or education also taught social studies. It may be that the social studies category used by Brumbaugh, et. al., included not only liberal arts social studies majors, but also educationand physical education majors who were student teaching in social studies. If this is the case, then the inclusion of education and physical education majors who rank very high on our BTSV scale compared to other groups, would probably have increased the over-all dogmatism rating of the group of social studies teachers studied by Brumbaugh, et. al.

Two possible explanations for the relationship between undergraduate major and belief in traditional sociopolitical values come to mind. On the one hand, one might argue that social studies, English, and social science majors have more formal experience investigating social issues and thus are more critical in their acceptance of traditional values. The high belief in traditional sociopolitical values demonstrated by the natural science and education majors may simply reflect their limited contact with social issues and their acceptance of the traditional values relative to social phenomena of earlier years. The other possible explanation is that variations in belief in traditional sociopolitic l values is due more to selective entrance into different disciplines than to the effects of the content of the fields on those pursuing them as students. Lipset points out that

"studies of entering freshmen--i.e., those who have not yet taken a single lecture--report the same relationships between intended college major and political attitudes as are found among seniors, graduate students, and faculty.[10]

College Attended for Undergraduate Degree

Since undergraduate majors were related to the BTSV groupings, it was hypothesized that the type of college the teachers attended for their undergraduate degree might also be related to the BTSV groupings. Specifically, the study investigated the size of college attended. Table 6 summarizes the results of this analysis.

The data indicate that in comparison with large institutions, the very small colleges tend to graduate more teachers who have a high belief in traditional sociopolitical values. The pattern in Table 6, though, is not consistent; teachers who attended colleges with enrollments between 700-2500 rank lower on the BTSV scale than teachers who attended colleges with enrollments between 2500 and 9000. It may be that our results would be clearer or more meaningful if the size of college attended was combined with other factors such as the variety of degree offerings, the geographic location of the institution, the make-up of the faculty, and whether the college was public or private. For example,

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[10] Seymour Martin Lipset, "The Activists: A Profile," The Public Interest, 13 (Fall, 1968), p. 46.

institutions with total enrollments of less than 700 probably have a limited number of courses and degree offerings. Institutions with enrollments between 700 and 2500 may be primarily colleges with strong emphasis on the liberal arts, while institutions with enrollments between 2500 and 9000 may be colleges or universities which heavily emphasize teacher training programs. At the moment, however, we do not have sufficient data to explain fully the relationship between the type of college attended and scores on the BTSV scale.

TABLE 6

BELIEF IN TRADITIONAL SOCIOPOLITICAL VALUES BY SIZE OF COLLEGE ATTENDED FOR UNDERGRADUATE DEGREE[11]

		BTSV GROUPS			
Total College Enrollment	N	Low	Medium	High	
0 - 700	28	18%	39%	43%	100%
700 - 2500	83	34	43	23	100
2500 - 9000	108	27	31	42	100
Over 9000	190	44	26	30	100
	N = 409	145	131	133	
	Chi Square = 20.58**				

** .01 level of significance

[11]The teachers in the sample listed the institution from which they obtained their undergraduate degree. The enrollment figures for these institutions were obtained from Allan M. Cartter (ed.), American Universities and Colleges (9th ed.; Washington, D.C.: American Council on Education, 1964).

Years Teaching

The number of years an individual has taught appears as a significant variable in a variety of educational studies.[12] The data in Table 7 indicate that in our study there is also a significant relationship between number of years teaching and BTSV groups. It is evident from the data that older teachers, as measured by years teaching, tend to believe more in traditional sociopolitical values than younger teachers. Only 26 percent of the teachers who have taught a year or less rank in the upper one-third of the BTSV scale, while 49 percent of the teachers who have taught between 21-30 years and 68 percent of the teachers who have taught over 30 years rank in the upper one-third of the scale. Approximately 40 percent of the teachers who have taught five years or less are in the low BTSV group, while only 27 percent of the teachers who have taught six years or more are in the low BTSV group.

An analysis of variance was also applied to the data. The F-Ratio for the three groups on the variable, years teaching, is 10.82, which is significant at the .01 level. The t-Ratio for a comparison of the means for the low BTSV group and the high BTSV group is -4.52 (df = 317), which

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[12] See, for example, Harmon Zeigler, The Political World of the High School Teacher (Eugene, Oregon: Center for the Advanced Study of Educational Administration, University of Oregon, 1966), pp. 40-50. Zeigler found that as teaching experience increases, so does political conservatism; with additional teaching experience, there is reluctance to speak in class about controversial topics.

indicates that the teachers in the high BTSV group have been teaching significantly longer than the teachers in the low BTSV group (.001 level of significance). It may be that these results reflect the fact that "number of years teaching" is also highly correlated with the age of the teachers and that the chronologically older teachers have a stronger belief in traditional sociopolitical values than the "new generation" of teachers.

TABLE 7

BELIEF IN TRADITIONAL SOCIOPOLITICAL VALUES
BY YEARS TEACHING

		BTSV GROUPS			
Years Teaching	N	Low	Medium	High	
0 - 1	86	42%	33%	26%	100%
2 - 3	103	38	38	24	100
4 - 5	48	46	19	35	100
6 - 10	79	27	35	38	100
11 - 20	82	33	33	34	100
21 - 30	41	27	24	49	100
Over 30	25	8	24	68	100
N =	464	158	147	159	

Chi Square = 32.27**

** .01 level of significance

The generalization that as number of years teaching increases teachers' belief in traditional sociopolitical values also increases does not appear to hold for the teachers who have taught 4-5 years. This group of teachers does not

fit the generally observed pattern. As a group, they tend to dichotomize into the upper one-third and lower one-third of the BTSV scale. As expected, the percent of teachers in the high BTSV group increases accordingly and conforms to the generally observed pattern, but there is a change in the pattern for the middle and low BTSV groups. Teachers whom one would expect to be in the middle BTSV group are, instead, in the low BTSV group.

Why does the 4-5 year group show this shift? It may be that teachers who have had several years of teaching experience and who, in the majority of cases, have acquired tenure are more confident and do not attempt to modify their attitudes because of professional or community pressures. It may well be that many of the 0-3 year teachers who are in the medium BTSV group are less sure of themselves and feel constrained by perceived professional and community pressure. Teachers who have been teaching 4-5 years are a unique group. For the most part they have just obtained tenure and many are beginning to be groomed for administrative positions. After this point many dissatisfied teachers undoubtedly leave the profession and many good teachers are enticed away from classroom teaching into administrative or guidance roles. Since the teachers who have been teaching 6-10 years again shift toward a high belief in traditional sociopolitical values, it is quite probable that many of the 4-5 year teachers who had a low belief in traditional values have left the classroom.

Teacher's Home Location

The other demographic variable which was somewhat intriguing was the home location of the teachers in relation to the school. The data in Table 8 indicate that teachers who live within the school community in which they teach have a significantly higher belief in traditional sociopolitical values than teachers who live outside the school community in which they teach. Thirty-eight percent of the teachers who live within the school community are in the high BTSV group while only 28 percent of the teachers who live outside the school community are in the high BTSV group.

TABLE 8

BELIEF IN TRADITIONAL SOCIOPOLITICAL VALUES
HOME LOCATION IN RELATION TO THE SCHOOL

		BTSV GROUPS			
Home Location	N	Low	Medium	High	
Teacher lives within school community	268	33%	29%	38%	100%
Teacher lives outside school community	198	33	39	28	100
	N = 466	158	149	159	
	Chi Square = 8.70*				

* .05 level of significance

Why do teachers who live in the same community in which they teach generally score higher on the BTSV scale than teachers who live outside the community? The answer may lie in the teachers' relation to community pressure

groups. Teachers who live within the community are undoubtedly more aware of community pressure groups and more sensitive to possible threats from these groups. They may feel more constrained by community pressures and as a result adopt more traditional stances in their attitudes. Teachers who live outside the community are not only apt to be less familiar with the various community pressure groups, but are also probably less worried about what effect conflict with these groups would have on their families and personal lives. Perhaps not living in the community gives the teacher a measure of independence.

CONCLUSION

This phase of the study revealed that secondary school teachers vary considerably in their belief in traditional sociopolitical values and that their belief in these values is significantly related to various indicators of quality of classroom discussion of social issues. For example, a greater number of teachers with a low score on the scale of belief in traditional sociopolitical values, as opposed to those with a high score, are willing to discuss all controversial issues in the classroom. Likewise, the low BTSV group selects instructional materials from several sources thus promoting the expression of divergent and often conflicting points of view. On one of the most important cognitive operations of teaching--ability to distinguish fact from opinion--the performance of the high BTSV group was

significantly lower from that of the low BTSV group. The performance of all the teachers on this skill was quite low. This confirms earlier findings that many teachers have not mastered some basic skills necessary for logical communication, one of which is the ability to separate factual statements from value statements. To many of them, if the value statement expresses their own values and sentiments, it is categorized as fact. According to this strange logic, opinions are facts when one agrees with them regardless of the statement's logical or evidential components.

What is the demographic profile of the teachers who score high on the scale of belief in traditional socio-political values? First of all, teachers who major in fields other than the social sciences and humanities as undergraduates tend to score high on the scale. Physical education, education, and natural sciences, in that order, seem to attract a disproportionate number of high BTSV teachers. There is also a tendency of very small colleges (enrollment no greater than 700) to attract a larger number of these teachers. The high BTSV teachers have several years of teaching experience, thus they are older members of the profession. These teachers usually live in the same community in which they teach; the low BTSV teachers tend to be commuters. Sex, tenure status, type of community, and level of education beyond the Bachelor's degree do not seem to be important in distinguishing between the high and low BTSV teachers.

Assuming that the profession is committed to promoting a more critical discussion of social issues in the classroom, what are the implications of our findings for education?

If high belief in traditional sociopolitical values is the result of inadequate training in the nature of social problems, then it would seem desirable for prospective as well as experienced teachers to participate in seminars which deal with (a) the substantive dimensions of important social issues and (b) teaching strategies which provide the opportunity to all members of a class to examine social issues and take defensible positions on them. If, on the other hand, high belief in traditional sociopolitical values is an aspect of an individual's personal attitude and value structure which is set before he enters college and is not susceptible to change, then perhaps there is little the profession can do in the way of training. If this is the case, then we should explore further the possibility of developing instruments, such as the BTSV Scale, which will identify these individuals and channel them into pursuits which are more compatible with their personality structures. Whatever approach we eventually take, given the context of society today, we need to attend more directly and systematically to the study of social issues in the classroom. In order to do so we need to prepare teachers in all subject fields who are both temperamentally and academically oriented toward teaching social issues through inquiry.

CHAPTER IV

A COGNITIVE CATEGORY SYSTEM FOR ANALYZING CLASSROOM DISCUSSION ON SOCIAL ISSUES

The second phase of the study, described in this chapter and the one which follows, sought to find out how controversial social issues are dealt with in secondary social studies classes, to develop criteria that would enable educators to classify classroom discourse on issues, and to indicate the range of cognitive operations and value judgments. This particular phase of the study attempts to develop a category system which may provide a meaningful way to look at and analyze classroom discussion based on social issues and value cleavages in society. While several category systems for analyzing classroom communication are available, no one deals focally with the examination of social problems.

Concern for studying classroom dialogue on social issues stems from the following general observations: (1) It is perhaps a rare occasion when a teacher plans for and includes in his formal classroom activity an issue which elicits a range of conflicting views and creates considerable emotional involvement on the part of students. (2) It is not unusual to find a civics or humanities course explicitly aiming at indoctrinating the student into accepting on faith

alone the prevailing social norms and standards of behavior. The orientation of these courses contradicts the aim of the President's Commission on National Goals and several civic and educational agencies which is to develop responsible citizens who would be, in the true Periclean spirit, "sound judges of policy" and who would actively participate in public affairs. (3) It is not unusual to see textbook authors, teachers, and students commit the "naturalistic fallacy;" that is, the fallacy of converting, without warrant, an "ought" judgment into an "is" statement. Also, in the resolution of a value conflict, there is a tendency to emphasize just the collection of facts, as if facts alone will point to a right decision or a just policy. While the identification of the factual and evidential roots of a social problem is a necessary operation in the conduct of inquiry, facts alone do not provide sufficient warrant for the acceptance or rejection of a value position. (4) It is not infrequent to encounter teachers whose only strategy in dealing with controversial issues is "to present all possible sides to a problem." It is generally assumed that when all sides are presented the teacher has attained the highest state of morality in the adjudication of values. While it is important that issue alternatives and issue consequences are presented and studied in an objective manner, it is equally important for the teacher to encourage students to take a value position that can be publicly communicated. (5) Issues which involve the student emotionally provide excellent

springboards for discussion; but in many instances, the students are either discouraged or they are not given any clues as to how they should proceed to examine the issue reflectively. In other instances the loudest or most erudite voice prevails in a way that inhibits free discourse. (6) There is very little in the way of tapes or stenographic reproduction of classroom discourse when controversial issues are studied. Consequently, many judgments about the treatment of controversial issues in class lack authoritative documentation or they are based on indirect sources,e.g., textbooks, curriculum guides, etc. Often these judgments fail to reflect classroom conditions. All these observations prompted us to develop the Michigan Social Issues Cognitive Category System described here.

In developing our category system we were guided by the following: (1) An inquiry model which assumes that certain cognitive operations--orientation, definition, hypothesis, explanation, evidencing, generalization--can be used productively in the classroom to help the discourse on the examination of social issues. It is assumed, however, that the model of the scientific method or its variants as proposed by Dewey, Schwab, Bruner, and others who work in the new curriculum projects, does not apply without important adjustments, to the analysis of social issues. Furthermore, it is assumed that many of the cognitive operations in our model are discrete and the employment of

one does not necessarily imply the employment of another. (2) A social issues model which presumes that the teacher takes the position of "defensible partisanship." This position implies that the teacher is partisan to (a) the rational processes of inquiry, (b) democratic classroom participation, and (c) defensible and explicit choices rather than impulsive or uncritical choices. The acceptance of the model of defensible partisanship automatically implies rejection of such teaching positions as deliberate exclusion of controversy, neutrality, indoctrination, or the uncritical perpetuation of the status quo. The teacher bases his behavior on the principle that values are not taught but critically examined. (3) An open classroom climate which encourages wide student participation and the expression of diverse points of view which may be in conflict with each other. Each student is given the opportunity to express his position on an issue and is encouraged to offer defensible grounds for it. The value position is accepted by the class to the extent that it rests on explicit and valid grounds.[1]

In sum, we assumed that a classroom which provides a defensible model for analyzing controversy is one where there is a climate supportive of the presentation of conflicting value alternatives, and of explicit position taking

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[1]For an elaboration of the theoretical dimensions upon which the system is built, see Byron G. Massialas and C. Benjamin Cox, Inquiry in Social Studies (New York: McGraw-Hill Book Company, 1966), Chapters 4 and 7.

(e.g., hypothesis formation) followed by grounding (e.g., tracing logical consequences). These were then the general considerations which guided us in developing the Michigan Social Issues Category System. The actual system, however, evolved from our observations in the classroom. Let us now turn to some of the procedures used in our work.

PROCEDURES

The main goals in constructing the category system described here are to provide an instrument which permits one to classify meaningfully spontaneous classroom discourse focused on social issues and, on the basis of this, to analyze the sequence and distribution of patterns of interaction between members of a class. As with other category systems, the Michigan Category System can be used (a) to get a better understanding of the dynamics of instruction; (b) to provide objective feedback to the teacher for assessing his classroom performance (this may provide the teacher rational grounds for changing his instructional program); and (c) to given researchers a system of logical categories and a set of procedures in determining the interactive communication patterns in the classroom. As in the case of almost all other cognitive category systems which are fairly complex, the Michigan System was not used in this study to categorize directly communication in live classrooms; rather,

we relied on transcribed tapes taken in the classroom.[2] Unlike the other category systems, however, the system described here focuses on classroom dialogue related to contemporary controversial issues.[3] As used in this context, controversial issues are components of larger societal problems in which classroom participants are emotionally involved. These social issues are presented as alternatives which the participants critically analyze.

To accomplish these somewhat ambitious goals, sixteen social studies teachers who had responded to the original Michigan Social Issues Teacher Questionnaire and who met specified criteria were contacted and arrangements were made for taping their classes. (The sampling procedure and criteria used to select the sixteen teachers are described in Appendix I.) When the tapes became available, the investigators began to construct the categories which would be appropriate for analyzing them. In addition to the theoretical

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[2]The taping and transcribing procedures used are described in detail in Appendix IV. Using the Michigan Social Issues Category System to code live classroom interaction is described in Appendix VI.

[3]Of the two dozen-plus category systems (both cognitive and affective) reported by Simon and Boyer, only one purports to deal with controversial issues. However, its direction and focus is significantly different from the Michigan Social Issues Cognitive Category System. See Anita Simon and E. Gil Boyer, Mirrors for Behavior: An Anthology of Classroom Observation Instruments (Philadelphia, Pa.: Research for Better Schools, Inc., and the Center for the Study of Teaching, Temple University, 1967).

dimensions mentioned earlier, several important assumptions guided the investigators in their work:

1. That the system be all-inclusive, i.e., the system allow for categorization of all detectable verbal acts and not simply for categorization of selected portions of classroom discussion;

2. That the categories be made clear and mutually exclusive;

3. That the focus of the system be on the cognitive aspects of classroom interaction, based on social issues, rather than on the affective, although the latter should be incorporated;[4]

4. That the complex intellectual process in the classroom is most effectively analyzed using a unit of measurement based on discrete intellectual operations. In the Michigan Social Issues Cognitive Category System the unit is a single and complete cognitive or affective operation as defined in the nine categories, regardless of time required to perform the operation.[5] It is further assumed that an intellectual operation is flexible enough to allow for differences in teacher style and the pattern of verbal communication in a particular class;

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[4]The distinction drawn here between the cognitive (emphasizing thinking) and the affective (emphasizing attitudes) domains is based on Benjamin S. Bloom, ed., Taxonomy of Educational Objectives; Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956). The investigators acknowledge that there is a great deal of overlap between cognitive and affective operations. For our purposes, however, we include in the cognitive categories 1 through 4, and 6 through 9, information processing and intellectual skills such as defining, position-taking, and grounding. The non-cognitive aspects which are included in category 5 deal mainly with the reinforcement climate in the classroom and with procedures of general classroom management.

[5]The unit which we call "intellectual operation" more appropriately applies to the cognitive categories rather than the non-cognitive, but since the main focus of the Michigan System is on cognitive performance, all units are referred to as intellectual operations.

5. That position-taking and grounding are necessary operations in the conduct of inquiry on social issues and that the incidence and sequence of these operations vis-a-vis other operations are extremely important.

Given these basic assumptions, the project team proceeded to develop the category system. As we mentioned in the first chapter, the original categories proposed by the team were based upon an ideal model of logical discourse. As the investigators worked with the tapes and coded actual classroom interaction, it became apparent that an abstract model of logical discourse cannot be applied to classroom discussion without modification. A number of original categories were changed or deleted and other categories were added. The category system went through approximately fifteen revisions before reaching its present stage. A summary of the resulting system is presented in Figure 1.

THE MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

A. Request for Cognitive Operation

1. Exposition: The speaker requests statements which provide general information or summarize the discussion.

2. Definition and Clarification: The speaker requests statements which (a) tell how the meaning of words are related to one another, or (b) clarify a previous statement.

3. Positions and Hypotheses: The speaker requests statements which include or imply the phrases, "I believe," "I think," "I hold," "I feel," etc., followed by his hypotheses, preferences, evaluations or judgments regarding a given issue.

4. Grounding: The speaker requests reasons supporting a position or hypothesis. Requests for grounding must be clearly linked to a position-statement, hypothesis or proposed definition.

B. Non-Cognitive Operations

5. Non-Cognitive

5.0 Request for Non-Cognitive Operation
5.1 Directions and Classroom Maintenance
5.2 Restatement of Speaker Ideas
5.3 Acceptance or Encouragement
5.4 Non-Productive Responses
5.5 Negative Responses
5.6 Fragmented Discussion

C. Performance of Cognitive Operation

6. Exposition: The speaker makes statements which provide general information or summarize the discussion.

6.1 Background
6.2 Summarizing

7. Definition and Clarification: The speaker makes a statement which (a) tells how the meanings of words are related to one another, or (b) clarifies a previous statement.

7.1 Genera -Stipulative
7.2 Quality- Value
7.3 Clarification

8. Positions and Hypotheses: The speaker makes statements which include or imply the phrases, "I believe," "I think," "I hold," "I feel," etc., followed by his hypotheses, preferences, evaluations or judgments regarding a given issue.

8.1 Non-Prescriptive
8.2 Prescriptive
8.3 Reassessment

9. Grounding: The speaker gives reasons supporting a position or hypothesis. Grounding statements must be clearly linked to a position-statement, hypothesis or proposed definition.

9.1 General Knowledge
9.2 Authority
9.3 Personal Experience
9.4 Experience of Others
9.5 Consequences
9.6 Position-Taking
9.7 No Public Grounds

Figure 1. A Summary of the Categories.

AN EXPLANATION OF THE CATEGORIES

The Michigan Social Issues Cognitive Category System consists of nine basic categories, eight of which are cognitive (categories 1-4 and 6-9) and one which is identified as non-cognitive, (category 5). Categories 5 through 9 are further subdivided into more specific categories to make a total of 26. All twenty-six categories are defined in terms of a classroom speaker; no single category is restricted to teacher statements or student statements. Figure 1 summarizes the categories.

Categories 1-4 are "request" categories. In these categories the speaker makes statements requesting that another speaker perform a particular cognitive operation. Category 1 "Exposition" includes all statements in which the speaker requests that another individual provide general information or summarize the discussion. "What does your textbook say about the causes of World War II?"is an example of a request for general information. In category 2, "Definition and Clarification," the speaker asks another individual to explain the meaning of a word(s) or to clarify the meaning of a previous statement. For example, the teacher

might ask a student to "...define what you mean by democracy."

In contrast to requests in categories 1 and 2 where the speaker is simply asking questions requiring knowledge or comprehension, in categories 3 and 4 the speaker is requesting that more complex cognitive operations be performed.[6] In category 3 the speaker requests that another individual indicate his hypotheses, preferences, evaluations or judgments regarding a given issue. When a student askes a teacher if he "...thinks burning draft cards is wrong," he is making a category 3 request. If the teacher does take a position on the issue of burning draft cards, the student might then ask the teacher to state the reasons for his position. This constitutes a category 4 request, "Grounding." Here the speaker asks another individual to support positions or hypotheses. Requests for grounding must be clearly linked to a position-statement or hypothesis.

Categories 1-4, then, focus on questions raised in the classroom. These categories are defined in such a way that they include all of the cognitively-oriented questions which might occur. In addition, the questions are grouped into four distinct categories involving different levels of cognitive complexity.

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[6]Benjamin S. Bloom (ed.), op. cit. This taxonomy identifies knowledge and comprehension as less complex cognitive operations than application, analysis, synthesis and evaluation.

Category 5 in the system is what we have called "Non-cognitive" and consists of seven sub-categories. The operations in this category do not involve explicit contributions to the cognitive discourse. In category 5.0, "Request for Non-Cognitive Operation," the speaker requests (1) information concerning students, classroom procedure or operation, or (2) that an individual repeat a previous statement. Examples include questions such as, "Where is Japan?," "Did we talk about this yesterday?," or "Would you repeat that?" Category 5.1, "Directions and Classroom Maintenance," refers to statements on classroom procedure or operation. Statements calling for recognition of students are included here, e.g., "Sue, you had your hand up." When the speaker paraphrases or restates a statement made by a previous speaker or by himself, it is coded as 5.2, "Restatement of Speaker Ideas;" for example, "As John noted, the balance in the Senate changed." Category 5.3 refers to statements of acceptance or encouragement, implying that the individual should continue his behavior, e.g., "You've brought up a good point." "Non-productive Responses," category 5.4, indicates an inability or unwillingness of the speaker to respond to a request or perform a task, e.g., "I don't know the answer to your question." "Negative Responses," category 5.5, refers to a speaker making irrelevant or disruptive statements or he corrects or states the inappropriateness of another speaker's statement, e.g.,

"Sue, I don't think you were listening." Finally, "Fragmented Discussion," category 5.6, refers to a period which cannot be categorized because the statement or statements cannot be understood, e.g., "Ah, well..."

Categories 6-9 are cognitive categories paralleling categories 1-4. Whereas in categories 1-4 the speaker is requesting that a cognitive operation be performed, in categories 6-9 the speaker is actually performing a given cognitive operation. In addition, categories 6-9 are subdivided into more specific categories.

Category 6, "Exposition," is a category in which the speaker makes statements providing background or summary information. Using some of the terminology of earlier category systems, many of the operations in this category can be properly referred to as lecturing or imparting information on a topic. When a statement is coded as 6.1, "Background," the speaker makes statements which provide general information by explaining or elaborating upon the material. For example, "A fellow in the United States registers for the draft on his eighteenth birthday," is a statement which is coded as "Background." In "Summarizing," 6.2, the speaker makes statements reviewing the progress of discourse. The speaker does more than paraphrase another; he also integrates previous discussions. The following excerpt provides an example, "Let's see if I can tie this discussion together. Two major points have been mentioned--first, that world-wide birth control may be necessary if we are to control the population

explosion, and secondly, that when planning birth control programs, we must consider the religious orientations of the community or country involved."

The seventh category deals with "Definition and Clarification." Here the teacher or the student tries to provide the meaning of words or statements. This category is considered important in the conduct of inquiry into social issues since many contemporary issues cannot be understood or resolved because of ambiguity and confusion over meaning of key concepts. This category includes three subcategories. The "General-Stipulative," category 7.1, refers to generally accepted or contextual definition of words for class use. The user of a term either accepts a general definition as provided; for instance, in a dictionary, or he specifies how he proposes to use the term in the present context. An example of a definition in this category is, "A slave is a person who is held in servitude as the property of another person." Category 7.2 is labeled, "Quality-Value," and it refers to word definitions which have judgmental or prescriptive connotations. This judgmental aspect is illustrated in the following exchange. "What is a good citizen?" "A good citizen is a person who exercises his voting responsibilities." Subscript 7.3, "Clarification," refers to statements made to remove ambiguities in the meaning of previous statements, e.g., "When I said 'that treaty,' I was referring to the Treaty of Versailles."

The eighth category focuses on position-taking and the formation of hypotheses regarding social issues. This is a

very important classroom operation and its incidence determines the extent to which participants are willing to take positions, some of which may be in conflict with each other, and to reveal their biases. Statements of this sort are usually prefaced with, "I believe," "I think," "I hold," etc. These prefatory remarks remain implicit, although sometimes the kind of position one may take can be "Non-prescriptive" (8.1), "Prescriptive" (8.2), or it can be a "Reassessment" (8.3) of a previous position or hypothesis. In the non-prescriptive category are statements which, once their key concepts are defined, are subject to validation by reference to factual evidence or to observations in the real world. "I think that blacks are not given as equal medical treatment as whites in the United States," is an example of a position statement which does not prescribe what ought to be done but can be validated by reference to evidence provided the concept of equality is defined. "All men should be treated equally under the law" is a prescriptive statement which clearly expresses a preferential position on how men ought to be treated. "Taking into account John's comments, I tend to think that socialism is not always evil," is a re-evaluation of a position in light of new evidence.

The last basic category in the cognitive area is "Grounding." As mentioned before, grounding is a category with strong qualitative implications and the operations included in it constitute, in the judgment of the investigators, the heart of the process of examining and analyzing social problems. In "Grounding" operations the speaker is giving reasons for taking

a position or offering a hypothesis. The authors assume that what separates a classroom, where social issues are productively discussed, from one where they are not, is a regular 8-9 sequence, i.e., position statements invariably followed by grounding. This assumption needs to be tested against additional classroom data, but it is further developed in the next chapter.

Category 9 includes seven sub-categories as follows: The "General Knowledge" category, 9.1, refers to grounds based on general knowledge without revealing the source of that knowledge. For example, to support the position that 18-year-olds should have the vote a speaker might state "...18-year-olds can be drafted...." Category 9.2, "Authority," refers to a speaker defending a position by citing an expert or a particular source. Here is an example of this: "I'm against the riots and I think they can be stopped. I was reading a Time article, and it seems that tear gas works pretty good" (position statement followed by expert citation). Category 9.3 refers to "Personal Experience" which a person cites to defend a position, e.g., "I don't think that Negroes are discriminated against..." (position) "...because up at the shop where I work some of the colored have better rates on their machines than the whites do" (grounding). In category 9.4 one can cite "Experience of Others" to defend a position, e.g., "I think that the publicity given LSD has encouraged kids to take it" (position). "This girl was saying that the reason she took LSD was because they gave such a write-up in the papers about what it does for you" (grounding). In "Consequences," 9.5, the speaker supports a

statement or position by pointing to its logical or pragmatic results, e.g., "I don't think we should use nuclear bombs on North Vietnam..." (position) "...because if we do, Russia would probably be forced to enter the war" (grounding). One may also ground a position by referring to another position, e.g., "I think the riots at Columbia were necessary..." (position)"...because the President of Columbia was incompetent" (grounding). Finally, category 9.7, "No Public Grounds," refers to a statement in which the speaker fails to provide any explicit grounds for a position, i.e., he expects that affirmation of belief on his part provides adequate justification for the position. A statement coded under this category occurs in the following exchange: "I think we should stop the war in Vietnam" (position statement). "Why?" (request for grounding). "I just think we should" (grounding by no public grounds).

It is apparent that categories 9.6, "Position-taking," and 9.7, "No Public Grounds," contain statements which do not involve explicit logical grounding. Although one might question the validity of including these sub-categories, the fact remains that individuals do attempt to support a position with these types of statements. One of our future tasks is to establish the frequency of occurrence of operations such as these and determine their influence in the critical examination of social issues.

CODING PROCEDURES AND GROUND RULES

Coders working in pairs used the category system described above to classify the verbal transactions in the classroom. The

coding procedures developed here were used to analyze taped and transcribed classroom communication. As we mentioned before, the primary unit of measurement is an "intellectual operation" which has been expressed as a verbal communication in the classroom. Everytime a transition to a new intellectual operation occurs, either by the same speaker or by a new speaker, a new unit is noted. Whenever there is a shift in speakers, a new unit is noted. There are two notations for speakers, "S" for students, and "T" for teachers.

Coders used typescripts of classroom communications having, on the left hand side, three columns for coding verbal operations. (See Figure 2.) When a speaker requests that an operation be performed (categories 1 through 4), the unit is recorded in the "R" column. When a speaker actually performs a given cognitive operation (categories 6 through 9 including subscripts), the unit is recorded in the "P" column. When a non-cognitive operation takes place (category 5), the unit is recorded in the "NC" column.

Before coding, each coder has to become thoroughly familiar with the category system and the ground rules. (The procedures used for training and supervising coders are described and evaluated in Appendix V.) The general ground rules, or guidelines, used for categorizing the dialogue are provided below.

GUIDELINES

1. When categorizing, paraphrase the content of the unit and categorize in reference to the context of the discourse and intent of the speaker.

2. In case of doubt regarding the number of units in a discourse, carefully examine the context and overall intent of the speaker. Subdivide only when there is a clear switch in units or speakers.

3. In case of strong doubts regarding statements which could be categorized into two different categories, use the following preference scheme:

   a. Definition
   b. Grounding
   c. Position-Hypothesis
   d. Exposition
   e. Clarification
   f. Non-Cognitive

4. To be categorized under position and hypothesis, the statement must be the speaker's <u>own</u> hypothesis or position.

5. Background information frequently accompanies a request for a position. If it is impossible to understand the request without including the background information, then code the discourse as one unit--i.e., request for a position. If this request can be understood without the background information, then code the discourse as two units--i.e., background and request for a position.

Examples:

T3 T: President Nixon would like the surtax extended. Do you agree with his position?

T: The United States has consistently voted against seating Red China in the United
T61 Nations. Many writers have argued lately that we should change our policy./ What
T3 do you think? Do you think China should be included in the U.N.?/

6. Positions taken on the definition of word(s) should be coded under definition; applications of definitions should be coded under positions or hypotheses.

Examples:

S71 S: I think a total war is a war in which the entire resources of the country are used to win the war.

S81 S: I think World War I was a total war.

7. If grounding statements are not clearly linked to positions, hypotheses, or definitions, categorize them under exposition.

8. When the following sequence occurs: position, another code (e.g., grounding), position, code as follows:

   81/91/81 if the second position is different from the first.

   81/91/52 if the second position is the same as the first.

Examples:

S81 S: I think the Senate is going to pass the ABM proposal./ The latest Gallup Poll
S92 shows that 51 Senators favor the proposal
S52 and 49 are opposed./ It will pass./

S81 S: The Senate will pass the ABM proposal./ The latest Gallup Poll shows that 51
S92 Senators favor the proposal and 49 are
S82 opposed./ It is a mistake, though, the Senate should not pass the bill.

9. Background (6.1) emphasizes content. Maintenance (5.1) stresses classroom procedure.

10. When the speaker is providing new information, do not categorize the statements as summarizing.

11. Categorize rhetorical questions (i.e., the speaker does not expect a response) as performing.

12. If a speaker asks a question that includes a request for confirmation of background information, a position, clarification, a definition, or grounding, code the question as a literal request. If the response is merely a confirmation, code it as encouragement, "53."

Examples:

T3 T: Don't you think that protecting the health of the mother is a sufficient reason for an abortion?

S53 S: Yes.

S: Don't you think that protecting the health
S3 of the mother is a sufficient reason for an abortion?

S: The life of the child should be the most
S82 important consideration.

13. Beware of the clarification (7.3) category. It is often confused with position-taking, grounding, background, definition, etc. It should be used as little as possible.

14. If in the middle of a cognitive unit, the speaker calls on another individual, code the main cognitive unit only once and code "the calling on the other individual" as a separate unit at the end of the main cognitive unit.

15. If in the middle of a cognitive unit the speaker interrupts himself to perform classroom maintenance operations other than just calling on another individual, (1) code the operation occurring before the interruption, (2) code the interruption, and (3) code the operation occurring after the interruption.

16. If a cognitive unit is interrupted by another speaker and then completed, code the cognitive unit only once.

17. Partial comments, interrupted thoughts or classroom confusion caused by many people talking should be categorized as "Fragmented Discussion," (5.6).

18. If discourse is fragmented but it is clear from the context which cognitive unit occurred, do not code the discourse as fragmented; instead, code the discourse in the appropriate cognitive category. The coders should be reasonably certain from the context that the code is correct.

19. Do not code classroom laughter as a separate cognitive unit.

Figure 2 illustrates how typescripts are coded. The number, 467, is a code for the classroom teacher. The class was taped on 10/30/68. The three columns on the left are for Request, Performance, and Non-Cognitive. T3, the first entry under R, indicates that the teacher is asking that a position be taken or a hypothesis be formed. S81, the first entry under P, indicates that the student is taking a position or making a hypothesis which is non-prescriptive. The first notation under the NC column, T51, indicates that the teacher provided "directions and classroom maintenance;" in this instance, he recognized

467 10/30/68 467

R	P	NC		
T3			T:	What about these draft card burners? She claims they're unpatriotic. Is there anyone who thinks they're not?/ Janet?/
		T51		
	S81		G:	I think they're just against the draft and they're not really unpatriotic; they just don't want to be drafter./
		T51	T:	Faye?/
	S81		G:	No, I don't think that they're not being patriotic. I think it's just that they don't believe the war is right./
		T53		
		T51	T:	Oh./Mark?/
	S81		B:	Ah, Yes, it probably could be because they're scared, too, you know, scared of dying and probably it would be because they don't want to go to Vietnam./
T2			T:	They have no good reason for protesting then, right?/
	S73		B:	No, for burning their draft cards./ I think a lot of them are scared; that's why they do it./
		S52		
		T53		
		T51	T:	All right,/Jean?/
	S81		G:	Well, when a person burns their draft card, they're a little bit patriotic/ because they're really risking their lives protesting like that because in riots like that and in draft card burnings like they have for protests, they can, well,
	S91			not saying that the police are wrong, but they get beaten by the police, you know, for doing that. And they're willing to spend I don't know how long in jail for doing it/and that's just as bad as going
	S81			to war./
		T53	T:	Yes,/how about that?/ They're risking
		T52		police sentence, police records, jail
		T51		sentences, and everything else./ Jeff?/
	S61		B:	Well, draft cards are from the government./
	S95			When you burn up the draft card, you're
	S81			actually defying the government, and/therefore, you're unpatriotic./

R	P	NC	
			B: I think in a sense the United States is at stake like in the war in Vietnam. I mean the spread of Communism could keep on going and going and, I know there could be arguments towards that but, but that if the United States is at stake in some of this whereas it could possibly lead up to it/then it's being unpatriotic to burn your draft card./
	S96		
	S81	T53	
		T51	T: All right./Pat?/
	S82		B: Well, I think we should define patriotism first, I mean, a lot of people think, you know, some people think that burning your draft card is being unpatriotic/well, what is patriotism?/
S2			
		T53	T: All right,/what is patriotism?/
T2			

FIGURE 2: Example of Coded Transcript

a student. In the dialogue section, the person speaking is indicated by the letters "G," "T," or "B," which stand for girl, teacher or boy respectively. If the coder is unable to determine the sex of the student speaking, an "S" is used. A slash (/) in the body of the transcript indicates that the coder recognized a transition from one unit of discourse to another.

CONSENSUS CODING

The final codes for a transcript are arrived at by "consensus coding." This procedure is based on the premise that many coding disagreements may be removed if two coders are given the opportunity to negotiate their disagreements. Since consensus coding requires careful scrutiny of points of disagreement, it provides higher reliability in the results obtained.

After each coder in a pair has analyzed and coded a transcript, the two coders review their disagreements. The coders then try to resolve each disagreement, if possible, and record a notation which is acceptable to both. In most cases, this type of compromise is reached and results in what may be called consensus coding. In those special cases where coders cannot agree, each one takes a turn in recording his own preference.

After a transcript has been analyzed and consensus codes agreed upon by a coding pair, the resulting units are entered into a Consensus Code Sheet (see Figure 3). The transcript page of the coded discussion is indicated under "Transcript Page."

_____ Teacher

_____ Date of Class

_____ Coders' Names

_____ Date Coded

	Re-quest	Per-form	(5) Non-Cog.	Trans-script Page	Time(sec.)
1		T61		1	15
2			T51	1	6
3		S61		1-2	126
4			T53	2	1
5		T61		2	5
6		S61		2	91
7	T4			2	4
8		S95		2	2
9		S96		2	9
10			T53	2-3	1
11	T1			3	3
12		S61		3	8
13	T1			3	1
14			S54	3	3
15			T55	3	2
16		S61		3	6
17	T3			3	2
18		S81		3	1
19		S95		3	4
20	T3			3	3
21		S81		3	1
22		S91		3	3
23			T56	3	1
24		S91		3	7
25			T53	3	1
26			T51	3	1
27		S81		3	4
28		S95		3	17
29			T53	3	2
30			T52	3	8
31			T53	3	1
32			T51	3	1
33		S81		4	4
34		S95		4	9

FIGURE 3: Consensus Code Sheet

The column marked "Time" is used to indicate the amount of time (in seconds) devoted to a particular operation. From this sheet, the sequence of agreed-upon codes and time spent are transferred to computer cards for further analysis.

ESTABLISHING CODER RELIABILITY

The Scott Coefficient is used for establishing coder reliability. After an entire transcript has been analyzed by a pair of coders (pair A), a second pair of coders (pair B) also analyzes and codes the entire transcript.[7] Using separate, unmarked copies of the transcript and working independently of pair A, pair B arrives at their own consensus code. Each pair of coders records the tallies they have obtained for each category, and enters these totals onto a sheet containing all categories and sub-categories for student and teacher (see Figure 4). The sum of tallies from each pair of coders, A and B, is entered in the respective categories in columns (2) and (3). Columns (4) and (5) indicate the percentage of tallies in each category. Column (6) indicates the difference between columns (3) and (4), and column (7) is the average percent falling in each category squared. These figures are needed to estimate the coding reliability by using the Scott Coefficient.[8]

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[7]It is not necessary to use two pairs of coders. If consensus coding is not used, two individual coders could establish reliability.

[8]W.A. Scott, "Reliability of Content Analysis: The Case of Nominal Coding," Public Opinion Quarterly, 19, (1955), pp. 321-25.

Transcript _____

FIGURE 4 Pair A _____

Pair B _____

CODING RELIABILITY

A) SCOTT COEFFICIENT

REQUEST

TEACHER PERFORM COGNITIVE

CATEGORIES	PAIR A	PAIR B	%A	%B	%DIFF.	(AVERAGE %)^2
T1	2	2	.47	.48	.01	.002
T2	8	9	1.88	2.14	.26	.040
T3	25	21	5.87	5.00	.87	.295
T4	0	0	--	--	--	---
S1	1	0	.23	--	.23	.000
S2	7	11	1.64	2.62	.98	.045
S3	22	17	5.16	4.05	1.11	.212
S4	7	7	1.64	1.67	.03	.024
T61	5	5	1.17	1.19	.02	.014
T62	5	4	1.17	.95	.22	.011
T71	0	1	--	.24	.24	.000
T72	0	0	--	--	--	---
T73	2	6	.47	1.43	.96	.009
T81	14	8	3.29	1.91	1.38	.068
T82	0	2	--	.48	.48	.001
T83	0	0	--	--	--	---
T91	3	3	.70	.71	.01	.005
T92	1	0	.23	--	.23	.000
T93	1	0	.23	--	.23	.000
T94	0	0	--	--	--	---
T95	0	0	--	--	--	---
T96	1	0	.23	--	.23	.000
T97	0	0	--	--	--	---
S61	11	11	2.58	2.62	.04	.068
S62	1	2	.24	.48	.24	.001
S71	2	3	.47	.71	.24	.003
S72	0	0	--	--	--	---
S73	9	11	2.11	2.62	.51	.056

FIGURE 4 (cont.)

	CATEGORIES	PAIR A	PAIR B	%A	%B	%DIF.	2 (AVERAGE %)
STUDENT PERFORM COGNITIVE	S81	92	81	21.60	19.28	2.32	4.178
	S82	20	25	4.70	5.95	1.25	.283
	S83	1	1	.24	.24	--	.001
	S91	20	23	4.70	5.48	.78	.259
	S92	5	3	1.17	.71	.46	.009
	S93	1	0	.24	--	.24	.000
	S94	1	1	.24	.24	--	.001
	S95	2	3	.47	.71	.24	.003
	S96	21	19	4.93	4.52	.41	.223
	S97	2	2	.47	.48	.01	.002
NON-COGNITIVE	T50	5	4	1.17	.95	.22	.011
	T51	41	43	9.62	10.24	.62	.986
	T52	7	5	1.64	1.19	.45	.020
	T53	16	15	3.76	3.57	.19	.134
	T54	1	0	.24	--	.24	.000
	T55	2	4	.47	.95	.48	.005
	T56	0	0	--	--	--	---
	S50	0	1	--	.24	.24	.000
	S51	21	21	4.93	5.00	.07	.246
	S52	16	20	3.76	4.76	1.00	.181
	S53	11	12	2.58	2.86	.28	.074
	S54	2	4	.47	.95	.48	.005
	S55	8	7	1.88	1.67	.21	.031
	S56	4	3	.94	.71	.23	.007
	TOTALS	426	420	100.00	100.00	18.94	7.513
	pO=100-pd					pd	(pe)

According to one author, the value of the Scott method in estimating reliability rests in the fact that it is "unaffected by low frequencies, can be adapted to percent figures, can be estimated more rapidly in the field, and is more sensitive at higher levels of reliability."[9] Applying Scott's formula we get .80 reliability coefficient as follows:

$$\pi = \frac{P_O - P_e}{100 - P_e} = \frac{100.00 - 18.94 - 7.51}{100.00 - 7.51} = .80$$

In the analysis of the classroom discourse, reliability checks such as the one described above were made at various intervals. The Scott Reliability Coefficients for the coding pairs on selected transcripts were as follows:

TRANSCRIPT	CODING PAIRS	USING 52 SUB-CATEGORIES SCOTT COEFFICIENT
619	A & B	.74
283	A & B	.87
508	A & C	.80
467	A & C	.79
139	B & C	.85
657	B & C	.80

A Scott Coefficient above .80 indicates a high congruence of judgment between the two pairs of coders in recording identical verbal behavior. In general, then, the reliability

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[9]Ned A. Flanders, "The Problems of Observer Training and Reliability," in Interaction Analysis: Theory, Research and Application, edited by Edmund J. Amidon and John B. Hough (Reading, Massachusetts: Addison-Wesley Publishing Company, 1967), p. 161.

between our coding pairs was quite high--particularly when one realizes that the Scott Coefficient is sensitive to the number of categories used (i.e., the Scott Coefficient tends to decrease as the number of categories increases) and the above coefficients were calculated using 52 sub-categories.

SUMMARY

In this chapter we have tried to retrace the assumptions we made and the steps we followed in developing a category system designed to analyze issue-centered classroom discussion. Since social issues have important implications for our daily lives, our main goal, from the beginning, has been to provide the teacher a meaningful framework with which to look systematically at his behavior in this domain. We have made the basic assumption that an instructional model based on inquiry processes should guide any attempt to examine social issues in the classroom. Earlier inquiry models used in instruction, however, have not been appropriate to the examination of values: they either emphasized the development of skills as defined by a scholarly discipline, or they stressed the affective components of classroom interaction.

The Michigan Social Issues Cognitive Category System is an attempt to give the teacher an index of his performance drawing some distinction between simple and complex cognitive operations, between value judgments which are justified and those which are not, and between open and closed classroom climates.

As indicated in previous pages, the Michigan Social Issues Cognitive Category System is a reliable instrument which can be used for teacher feedback as well as for establishing how teaching and learning take place in the classroom. The use of the instrument enables the researcher to go into the dynamics of instruction and to investigate in depth such classroom components as student participatory behavior, teacher dominative influence, and cognitive interaction. The researcher can select and isolate one of these components and study in detail its qualitative aspects. For example, part of classroom cognitive interaction can be traditional--mainly emphasizing background knowledge; but another part can be what we called "inquiry interaction." If the latter is the case, then certain classroom operations expressed in arithmetical ratios provide more refined indicators of teacher-student verbal performance. The more specific application of the category system to the analysis of classroom dialogue in selected classrooms will be developed in the next chapter.

CHAPTER V

DIALOGUE PATTERNS: STYLES OF CLASSROOM DISCOURSE IN THE TEACHING OF SOCIAL ISSUES

This chapter reports the dialogue patterns found in a sample of social issues classes and suggests ways in which data obtained from applying the Michigan Social Issues Cognitive Category System to classroom dialogue can be analyzed.[1] Sixteen social studies teachers were included in this phase of the study.[2] Each of their classes was taped while social issues were being discussed, and the tapes were transcribed and coded using the Michigan Cognitive System described in Chapter IV. The coded data for each class were then tabulated into interaction matrices with which the resulting patterns of verbal interaction were analyzed. The first phase of the analysis focuses on the observed occurrence and relative frequency of specified intellectual operations. Some of the concerns here are: What operations are occurring? Which ones are absent? Are there marked differences from class to class

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[1]The Michigan Social Issues Cognitive Category System is described in Chapter IV. The shortened title is the Michigan Cognitive System.

[2]For a detailed discussion of the sampling procedure see Appendix I.

in the frequency of given intellectual operations? The second phase of the analysis concentrates on conceptually relevant dimensions of classroom discourse such as student participation, teacher influence, cognitive interaction, and the context of inquiry. Some of the questions which may be answered by examining these dimensions are: How much and what type of student participation occurs in the discussion? In what manner does the teacher influence the interaction? Do students respond to questions raised by the teachers? Does the teacher lecture? Is the discussion built around exposition or inquiry? What is happening in an "inquiry" class? What occurs after a student takes a position on an issue? What kinds of statements trigger attempts to ground positions or define concepts?

INTERACTION MATRICES

Interaction matrices record a sequence of coded verbal dialogue in a classroom in such a way that the interaction between the classroom participants can be summarized and examined meaningfully. To illustrate how matrices are developed from coded dialogue let us look at the dialogue in Figure 1 which has been coded using the Michigan Cognitive System.

The three columns, R, P, and NC on the left of the dialogue are the three major divisions of intellectual operations used in the Michigan Cognitive System; that is, request operations, performance operations, and non-cognitive operations. The request operations include categories T1 through T4 and

R	P	NC	Time	
T3			8	T: What about these draft card burners? She claims they're unpatriotic. Is there anyone who thinks they're not?/
		T51	1	Janet?/
	S81		7	G: I think they're just against the draft and they're not really unpatriotic; they just don't want to be drafted./
		T51	1	T: Faye?/
	S81		3	G: No, I don't think that they're not being patriotic./
S2			3	B: Would you define what you mean by patriotic?/

FIGURE 1: Coded Dialogue

S1 through S4 and do not have subscripts. Categories T6 through T9 and S6 through S9 encompass the performance operations while categories T5 and S5 comprise the non-cognitive operations. All the performance and non-cognitive categories are subscripted. The column next to the dialogue labeled Time allows the coder to record in seconds the duration of a coded operation.

The first intellectual operation in Figure 1 is a request by the teacher and is entered as T3 in the R column. The letter T indicates that the teacher is speaking, while the number 3 means that he is asking that a position be taken or a hypothesis be formed. The eight seconds the teacher took to make the request is entered in the Time column. The second

operation is coded T51 and is entered in the NC column. The T5 means that it is a non-cognitive operation by the teacher while the 1 is a subscript indicating that the teacher called on a student. The 1 in the Time column parallel to the T51 indicates that the operation lasted one second. The first entry under P is S81. The S8 signifies that a student is taking a position or offering a hypothesis, while the 1 is a subscript which indicates that the position or hypothesis is "non-prescriptive." The operation took seven seconds which is recorded in the Time column. In general, then, each coded intellectual operation has four components: the speaker (indicated by S or T), the main category, the subscript, and the time associated with the intellectual operation.

Using only the main categories in the Michigan Cognitive System (ignoring subscripts for the moment), the coded dialogue in Figure 1 becomes this interaction record: T3(8), T5(1), S8(7), T5(1), S8(3), S2(3). T3(8) is the first entry in Figure 1 and in the interaction record; T3 represents the intellectual operation while the (8) indicates in seconds the duration of the operation.

A given interaction record may then be used to produce a number of interaction matrices. In our analyses of the data we employed two types of matrices: an intellectual operation matrix and a timed matrix. An intellectual operation matrix shows the distribution and interrelationship of the intellectual operations which occur in the class dialogue, while a timed matrix reveals how classroom time is distributed among the

various operations. In an intellectual operation matrix, the operations from an interaction record are tallied in a matrix one pair at a time; the duration of each operation is not relevant. Figure 2 illustrates how pairs from the above interaction record are entered into an intellectual operation matrix. The first pair of codes is T3-T5 and is tallied in the cell formed by the matrix row T3 and the column T5. The second pair is T5-S8 and is entered into the cell formed by row T5, column S8. The third pair, S8-T5, the fourth pair, T5-S8, and the fifth pair, S8-S2 are tallied in a similar fashion. In general, then, the particular cell in which tabulation of pairs of intellectual operations is made is determined by using the first operation in the pair to indicate the row and the second operation in the pair to indicate the column. Notice that each pair of operations overlaps with the previous pair, and each operation, except the first and last, is used twice. The Total column to the right of the matrix shows the number of times a particular operation was the first operation in a pair while the Total row at the bottom of the matrix shows the number of times a particular operation was the second operation in a pair.

In a timed matrix, the duration of each cognitive operation is taken into account and the operations are tallied at one-second intervals. Thus, the interaction record for Figure 1--T3(8), T5(1), S8(7), T5(1), S8(3), S2(3)--becomes this series of one-second time codes: T3, T3, T3, T3, T3, T3, T3, T3, T5, S8, S8, S8, S8, S8, S8, S8, T5, S8, S8, S8, S2, S2,

MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

MATRIX FOR 18 MAIN CATEGORIES

CATEGORY		TEACHER REQUESTS T1	T2	T3	T4	NC T5	PERFORMS T6	T7	T8	T9	STUDENT REQUESTS S1	S2	S3	S4	NC S5	PERFORMS S6	S7	S8	S9	TOTAL
TEACHER REQUESTS ↓ Noncognitive Performs ↓	T1																			0
	T2																			0
	T3					1														1
	T4																			0
	T5																	2		2
	T6																			0
	T7																			0
	T8																			0
	T9																			0
STUDENT REQUESTS ↓ Noncognitive Performs ↓	S1																			0
	S2																			0
	S3																			0
	S4																			0
	S5																			0
	S6																			0
	S7																			
	S8					1							1							2
	S9																			0
TOTALS	CATEGORY	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	2	0		5
	SUB-DIVISION	0		2		0					1		0			2				
	SPEAKER			2									3							

FIGURE 2

TALLYING INTELLECTUAL OPERATIONS

S2. The one-second time codes are then tallied in a matrix one pair at a time. Figure 3 illustrates how these time code pairs are entered into a timed matrix. As before, the row is used for the first code in the pair, the column is used for the second. In this example, the first pair is T3-T3 and the tally is placed in the row labeled T3 and the column labeled T3. The second pair is also T3-T3, as are the third through seventh pairs. The eighth pair is T3-T5, the ninth is T5-S8, the tenth is S8-S8, and so on. The Total column to the right of the matrix shows the total amount of time in seconds devoted to a particular operation.

Interaction matrices may be tabulated from interaction records of any length. For each of the 16 classes in the study we analyzed matrices representing a full-period of classroom dialogue. Computer programs were written which tallied an intellectual operation matrix and a timed matrix from a full-period interaction record using all 52 categories and sub-categories in the Michigan Cognitive System. In addition to producing these two interaction matrices, the computer programs also tabulated matrices after collapsing and/or deleting specified categories from the interaction record. Collapsing is particularly important since the Michigan Cognitive System contains a total of 52 subscripted categories. By collapsing subscripts and using only the 18 main categories, we were able to concentrate on an 18 by 18 category matrix (similar to the ones illustrated in Figures 2 and 3) instead of a more cumbersome 52 x 52 category matrix. We used the technique of

MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

TIMED MATRIX FOR 18 MAIN CATEGORIES

CATEGORY		TEACHER REQUESTS T1	T2	T3	NC T4	T5	PERFORMS T6	T7	T8	T9	STUDENT REQUESTS S1	S2	S3	S4	NC S5	PERFORMS S6	S7	S8	S9	TOTAL
TEACHER REQUESTS	T1																			0
	T2																			0
	T3			7		1														8
	T4																			0
Noncog-nitive Performs	T5																	2		2
	T6																			0
	T7																			0
	T8																			0
	T9																			0
STUDENT REQUESTS	S1																			0
	S2											2								2
	S3																			0
	S4																			0
Noncog-nitive Performs	S5																			0
	S6																			0
	S7																			0
	S8				1							1						8		10
	S9																			
TOTALS	CATEGORY			7		2						3						10		22
	SUB-DIVISION			7		2		0				3		0				10		
	SPEAKER					9								13						

FIGURE 3

TALLYING TIMED CODES

deleting the non-cognitive categories from the interaction record when we were interested in focusing only on the pattern of direct relationships among cognitive operations. Deleting the non-cognitive categories, T5 and S5, results in a 16 by 16 cognitive category matrix. Figure 4 is an illustration of the intellectual operations matrix which results when the techniques of collapsing subcategories and deleting the non-cognitive categories are applied to a full-period interaction record.

The matrix in Figure 4 represents a full-period discussion of the draft by a class of high school seniors (class H in the sample). All of the non-cognitive categories have been deleted from the interaction record so the matrix shows the interrelationship between the 16 main cognitive categories. Looking at the totals at the bottom of the matrix, we discover that this discussion was comprised of 284 separate cognitive operations, 110 by the teacher and 174 by the students. The teacher made 75 requests for cognitive operations and performed these operations 35 times, whereas the students made only 20 requests and performed 154 times. It is evident from these figures that the teacher did not dominate the discussion by lecturing to the students, but concentrated on asking questions and evoking student performance. The totals for each of the categories reveal that the most popular categories are T3, S8, and S9, with 43, 82, and 48 entries respectively. The concentration of operations in these three categories (173 of the 284 total cognitive operations) means that over half of the cognitive interaction consisted of the teacher requesting a

MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

INTELLECTUAL OPERATIONS MATRIX:

16 MAIN COGNITIVE CATEGORIES

CATEGORY		TEACHER								STUDENT								TOTAL
		REQUESTS				PERFORMS				REQUESTS				PERFORMS				
		T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	
TEACHER REQUESTS ↓ Performs ↓	T1	1												6			1	8
	T2		3				1							1	6	1		12
	T3			1		1		1			1	1	1		1	34	2	43
	T4			1	2								1			2	6	12
	T6			2	1	2				2	2		1	2		3	1	16
	T7		1	2						1		1				4		9
	T8		1		1	1			1		1					4		9
	T9			1														1
STUDENT REQUESTS ↓ Performs ↓	S1			1		4	1							1				7
	S2		1	1			3	1								1		7
	S3			2				1							1			4
	S4							1									1	2
	S6	4		2	1	2		1						4				14
	S7			4			3								1	1	1	10
	S8	1	3	14	4	4		3		2		2				18	31	82
	S9	2	3	12	3	2	1	1		1	3				1	14	5	48
TOTALS	CATEGORY	8	12	43	12	16	9	9	1	6	7	4	3	14	10	82	48	284
	SUB-DIVISION	75				35				20				154				
	SPEAKER	110								174								

FIGURE 4

DISCUSSION OF THE DRAFT BY CLASS H

hypothesis or position (T3) and the students giving a hypothesis or position (S8) and then grounding it (S9).

By examining the cells in the matrix, we can see more clearly the interrelationship between the cognitive operations. For example, what happens when the teacher requests a hypothesis or position (T3)? Looking at the T3 row we discover that of the 43 times the teacher requested a hypothesis or position, the students responded 34 times by providing a hypothesis or position (cell T3-S8). To discover what other cognitive operations, besides a T3 question on the part of the teacher, preceded a student hypothesis or position, we can simply refer to the vertical S8 column. By doing so, we discover that a student hypothesis or position was preceded 18 times by another student hypothesis or position (cell S8-S8) and 14 times by grounding (S9-S8).

How does the distribution of intellectual operations in class H compare with the other 15 classes in the study? To answer this question, data from class matrices such as the one in Figure 4 are synthesized, compared, and discussed in the sections which follow.

THE DISTRIBUTION OF INTELLECTUAL OPERATIONS IN SELECTED CLASSROOMS

In order to meaningfully compare classes, one must first convert the number of intellectual operations in each cell and category of a matrix to a percent of the total number of operations which occurred. This procedure is necessary because the total number of operations comprising a given class

discussion may vary from 100 to 800 depending on the nature of the discussion. Thus, if we are to compare categories and cells in a matrix we must use a common total base.

Although the 16 classrooms selected for detailed investigation are not representative of secondary school classrooms of social studies in the United States, the frequency and range of recorded operations are suggestive and may lead to meaningful ways of examining classroom performance when employing the Michigan Social Issues Cognitive Category System. Some of the questions that provide the focus of the analysis in this section are: (1) How often do certain intellectual operations occur? (2) What operations seem to be dominant for teachers and for students? (3) How does the time spent on certain operations compare with frequency of operations?

Tables 1 and 2 provide information to respond to the questions above. In order to be manageable, each table is based on 18 rather than 52 categories. Table 1 gives the percent of time devoted to each operation while Table 2 shows the percent of the total number of intellectual operations found in each category.

It can be readily observed that the 16 teachers in the group vary widely in their performance of classroom tasks. In examining the distribution of time spent on non-cognitive operations (T5), we discover that the teachers range all the way from 5.7 percent of classtime spent by teacher I to 37.6 by teacher L, with an average for all 16 teachers of 13 percent. In Table 2, which is based on the actual number of

TABLE 1

PERCENT DISTRIBUTION OF TIME SPENT IN 18 MAIN CATEGORIES

	CATEGORY													
Class	T1	T2	T3	T4	T5	T6	T7	T8	T9	S1	S2	S3	S4	S5
A	6.1	1.3	10.1	0.9	9.6	5.3	0.2	3.4	1.0	0.3	0.2	0.5	0.2	16.0
B	0.5	1.0	5.9	0.9	7.8	5.7	0.5	1.5	0.1	0.6	0.6	1.8	0.0	13.7
C	7.1	0.9	12.0	0.4	24.5	44.4	0.5	2.6	0.4	0.0	0.2	0.0	0.0	1.7
D	0.5	0.5	9.7	0.1	13.0	16.9	0.7	8.9	0.5	0.0	0.0	0.0	0.0	1.8
E	3.7	0.5	1.1	0.0	6.5	17.6	0.2	1.7	3.1	0.0	0.1	0.0	0.0	0.0
F	34.4	1.5	0.9	0.0	21.5	25.6	1.5	0.4	0.0	1.6	0.4	0.0	0.0	4.0
G	1.2	0.0	12.3	0.0	6.6	2.1	0.5	0.6	1.0	0.3	0.9	3.2	0.0	5.9
H	1.2	1.8	10.4	1.7	7.8	5.2	2.6	2.1	0.5	3.3	1.5	0.5	0.1	4.6
I	0.4	1.3	7.2	0.2	5.7	7.0	0.4	4.0	2.3	0.3	1.2	3.5	0.8	5.9
J	5.2	0.0	9.6	0.2	9.9	20.1	0.0	5.1	1.1	0.0	0.0	0.0	0.0	0.5
K	0.0	0.5	11.3	0.2	7.7	6.2	0.4	6.7	5.4	0.0	0.1	0.0	0.0	4.3
L	0.1	2.9	13.4	0.6	37.6	5.1	0.4	5.9	0.0	0.0	0.3	0.0	0.0	3.6
M	0.0	0.0	4.3	0.4	12.4	49.4	6.1	3.5	6.2	0.5	2.4	2.7	0.0	4.2
N	0.4	3.0	13.1	0.0	11.4	6.8	2.0	0.7	0.7	0.1	0.1	0.8	0.0	9.8
O	3.7	0.5	13.7	0.4	11.5	19.8	3.6	9.4	7.8	0.1	0.0	0.4	0.0	1.2
P	10.7	3.1	20.1	1.2	15.0	6.6	2.1	1.5	0.0	0.0	0.1	0.1	0.0	7.0
AVG	4.7	1.2	9.7	0.5	13.0	15.2	1.4	3.6	1.9	0.4	0.5	0.8	0.1	5.3

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TABLE 1 (cont.)

PERCENT DISTRIBUTION OF TIME SPENT IN 18 MAIN CATEGORIES

	CATEGORY						
Class	S6	S7	S8	S9	% Teacher	% Student	% Total
A	13.1	0.6	21.1	8.1	37.9	60.1	98.0
B	3.7	1.4	37.6	15.8	23.9	75.2	99.1
C	1.9	0.2	2.2	0.4	92.8	6.6	99.4
D	1.7	1.1	28.1	15.3	50.8	48.0	98.8
E	57.9	5.8	1.3	0.0	34.4	65.1	99.5
F	6.9	1.6	0.4	0.0	85.8	14.9	100.7
G	21.6	0.9	29.3	12.1	24.3	74.2	98.5
H	14.8	2.8	17.5	19.1	33.3	64.2	97.5
I	8.6	3.7	30.2	16.0	28.5	70.2	98.7
J	23.0	0.2	13.8	10.9	51.2	48.4	99.6
K	2.0	0.6	25.6	27.7	38.4	60.3	98.7
L	1.4	0.7	10.6	15.9	66.0	32.5	98.5
M	0.0	0.0	5.5	1.1	82.3	16.4	98.7
N	2.3	4.1	24.8	19.2	38.1	61.2	99.3
O	4.7	1.6	10.2	10.1	70.4	28.3	98.7
P	8.4	2.1	6.4	12.5	60.3	36.6	96.9
AVG	10.8	1.7	16.5	11.5	51.2	47.6	98.8

TABLE 2

PERCENT DISTRIBUTION OF INTELLECTUAL OPERATIONS IN 18 MAIN CATEGORIES

Class	CATEGORY																	
	T1	T2	T3	T4	T5	T6	T7	T8	T9	S1	S2	S3	S4	S5
A	6.8	2.5	8.5	0.8	21.2	2.2	0.4	1.9	0.4	0.3	0.7	0.7	0.2	23.5
B	0.4	2.0	6.2	1.4	16.2	1.8	0.6	1.6	0.2	0.7	0.9	2.3	0.0	28.8
C	8.6	2.0	9.9	1.0	35.4	11.8	1.1	3.0	0.3	0.0	1.1	0.0	0.0	8.4
D	0.8	2.7	11.4	1.1	32.2	3.5	1.2	4.0	0.5	0.0	0.3	0.0	0.0	8.0
E	7.1	3.6	2.1	0.0	49.9	6.4	0.7	3.5	1.4	0.0	1.4	0.0	0.0	0.0
F	21.2	2.1	1.1	0.0	29.0	9.0	2.2	0.8	0.0	2.3	0.8	0.0	0.0	11.8
G	2.2	0.0	10.0	0.0	16.6	2.6	0.4	0.8	0.8	0.4	1.6	1.9	0.0	14.2
H	1.9	2.8	10.4	2.8	22.5	3.6	2.0	1.8	0.2	1.6	1.7	0.9	0.4	8.3
I	0.4	1.9	5.8	0.2	16.8	2.3	0.4	3.1	1.3	0.2	2.1	4.6	1.7	14.4
J	6.5	0.0	6.1	1.4	37.4	5.1	0.0	4.2	1.0	0.0	0.0	0.0	0.0	1.9
K	0.3	1.5	11.3	1.2	19.1	2.8	0.6	4.6	2.5	0.0	0.3	0.0	0.0	8.1
L	0.3	4.6	11.7	1.7	36.1	2.1	0.6	2.0	0.0	0.0	0.9	0.0	0.0	10.0
M	0.0	0.6	5.6	1.3	33.1	8.2	4.0	3.6	3.0	1.7	4.6	2.9	0.0	18.1
N	0.3	4.5	10.0	0.0	29.0	2.1	1.5	1.2	0.3	0.3	0.3	1.8	0.0	12.8
O	6.0	0.8	13.0	1.2	25.3	6.4	3.2	5.5	3.6	0.4	0.4	0.4	0.0	7.9
P	9.0	3.4	10.6	2.4	23.2	2.0	1.8	1.6	0.0	0.0	1.6	0.2	0.0	15.0
AVG	4.5	2.2	8.4	1.0	27.7	4.5	1.3	2.7	1.0	0.5	1.2	1.0	0.1	12.0

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TABLE 2

PERCENT DISTRIBUTION OF INTELLECTUAL OPERATIONS IN 18 MAIN CATEGORIES

(continued)

	CATEGORY							
Class	S6	S7	S8	S9	% Teacher	% Student	% Total	Number of Total Codes
A	10.4	1.3	14.3	3.8	44.7	55.2	99.9	578
B	2.0	1.5	27.0	6.9	30.8	70.1	100.9	611
C	7.9	0.5	7.4	1.1	73.1	26.4	99.5	367
D	0.8	1.1	24.2	8.5	57.4	42.9	100.3	380
E	17.2	2.8	2.1	0.0	74.7	23.5	98.2	140
F	18.8	1.5	0.4	0.0	65.4	35.6	101.0	284
G	11.1	0.4	27.3	10.3	33.4	67.2	100.6	273
H	3.3	2.3	19.9	11.4	48.0	49.8	97.8	414
I	2.4	2.5	26.4	11.9	32.2	66.2	98.4	427
J	9.2	1.0	15.8	9.8	61.7	37.7	99.4	216
K	1.2	0.9	25.3	18.8	43.9	54.6	98.5	312
L	1.4	1.1	18.7	8.9	59.1	41.0	100.1	359
M	0.3	0.3	9.6	2.4	59.4	39.6	99.0	303
N	2.4	4.2	17.4	10.7	48.9	49.9	98.8	327
O	4.3	0.8	13.8	7.1	65.0	35.1	100.1	255
P	11.4	3.2	9.6	4.8	54.0	45.8	99.8	501
AVG	6.5	1.6	16.2	7.3	53.3	46.4	99.5	359

operations and not on time spent, the spectrum of non-cognitive teacher operations is represented by B and E with 16.6 percent and 49.9 percent of the total, respectively. In the average class, the non-cognitive operations account for 27.7 percent of all the operations which occur, a figure which is about twice as great as the average percent of time devoted to the same non-cognitive operations. The difference suggests that operations dealing with classroom management are quite frequent but do not consume as much time as cognitive operations where roughly the opposite is true, i.e., proportionately more time is needed to perform cognitive operations. This phenomenon can be observed again when non-cognitive operations performed by students are examined. While 12 percent of the operations are non-cognitive operations performed by students (S5), only 5.3 percent of class time is consumed by these operations. As in the case of their teachers, students spent relatively little time in matters dealing with classroom management, but apparently matters of this nature come up quite frequently in discussion. Methodologically speaking, it is quite important to analyze intellectual operations on the basis of both time spent in their exercise and the frequency of their occurrence. Either basis taken alone may distort the actual transactions in the classroom. To rely exclusively on time spent, as many category systems do, puts restraints on the investigator's interpretations of what tasks teachers and students attend to in the classroom.

Another area in which there is considerable variance among classes is the extent of student verbal participation in the classroom. Tables 1 and 2 provide information about the range of teacher versus student involvement. Table 1 shows that teacher B spends less time talking than any of the other teachers in the study (23.9 percent of total time). His students participate 75.2 percent of the time. In contrast, teacher C virtually monopolizes classroom discussion by talking 92.8 percent of the time while his students are talking only 6.6 percent of the time. Table 2 roughly corroborates the observations concerning classroom climate, that is, it indicates whether or not it is relatively open for student participation. Teachers B and C are at opposite ends of the participation continuum, although teacher E slightly exceeds teacher C in dominating the conduct of intellectual operations in the class. Overall, teacher verbal transactions slightly exceed those of students by 3.5 percent of the total time (Table 1) and by 6.9 percent of the total number of operations (Table 2) based on time spent. When we examine the averages, we find that the teachers in the group spend less time dominating the discussion than does the average teacher in Flanders' studies.[3] He found that it was only teachers in superior classrooms who

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[3]Ned A. Flanders, "Intent, Action, and Feedback: A Preparation for Teaching," in Interaction Analysis: Theory, Research and Application, ed. by Edmund J. Amidon and John B. Hough (Reading, Massachusetts: Addison-Wesley Publishing Company, 1967), p. 285.

spoke 50 to 60 percent of the time, whereas in the average classroom teachers dominated the discussion two-thirds of the time. The phenomenon, however, where 51.2 percent of the total time spent in verbal communication in class is preempted by the teachers, is certainly not compatible with the optimum proposed by most theorists in education, psychology, or philosophy, from John Dewey to Jerome Bruner, who would have the students rather than the teacher initiate and probe ideas about society. In the opinion of these theorists the teacher should serve as a facilitator--one who creates the conditions for inquiry, not one who dominates inquiry. In this role the teacher talks relatively little--the students do the talking in the way of developing and testing their own ideas.

Before going into the more qualitative aspects of the 16 classrooms let us look briefly at the incidence of intellectual operations. Which particular operations are performed frequently and which ones infrequently? Are there any differences between teachers and students in regard to concentration on certain operations? If we look at the averages in Table 2 we note that the highest frequency of operations among teachers is in the non-cognitive category (T5) with 27.7 percent of the total distribution. The next highest frequency among the teacher group is request for positions and hypotheses (T3) with 8.4 percent of the distribution. Among students, position taking and hypothesis formation (S8) is high, with 16.2 percent, followed by non-cognitive operations (S5) with 12 percent of

the distribution. Thus there is general congruence between teachers and students in the nature of operations performed most frequently. Together they invest 39.9 percent of their operations to the non-cognitive operations having to do with classroom management and procedural matters. Request for and performance of operations dealing with positions and hypotheses are also quite common--teachers request and students perform. The least frequent operations among teachers are those having to do with grounding--both request (T4) and performance (T9) with only 1 percent of the distribution given to each. Among students, requests for grounding (S4) and for exposition (S1) are virtually non-existent with each accounting, respectively, for 0.1 percent and 0.5 percent of the distribution. In general, students do not seem to be requesting too much either from their fellow students or from their teachers. Most of the requests (categories T1-T4 and S1-S4) are initiated by teachers. Of the total distribution, 16.1 percent are requests initiated by teachers and only 2.8 percent are requests initiated by students. On the other hand, students perform more cognitive operations than their teachers. Only 9.5 percent of the total distribution in Table 2 is comprised of teacher performance of cognitive operations (T6-T9) while 31.6 percent consists of student performance of these same operations (S6-S9). From these distributions it might be inferred that the general pattern of classroom discourse is characterized by the teachers asking questions and the students providing answers.

When one looks at Table 1, which deals with time spent in the categories of the taxonomy, a somewhat different picture of the teacher emerges. The teacher spends only 13 percent of the total time in managerial or procedural matters (T5), but spends 22.1 percent of class time in performance operations (T6-T9). Evidently his performance operations are quite lengthy, a fact which may explain the relatively low frequency that they show in Table 2. The teacher talks a great deal in the same mode so that the same performance operations occur and are recorded as such. The teacher performance operation which consumes the most time is exposition (T6) with 15.2 percent of the total. Exposition thus accounts for approximately one-third of the total teacher time spent in verbal communication in the classroom (that is, 15.2 percent in relation to the 51.2 percent of the total time consumed by the teacher). The fact that the teacher spends roughly one-third of his time performing and another one-fourth in managing reduces considerably the amount of time he spends eliciting responses from his students. But as we shall see later, the amount of time and energy invested by the teacher in request operations (T1-T4) is significant as evidenced by a .69 correlation between teacher questions and student response. A more systematic investigation into the correspondence between teacher requests and student performances as well as other dimensions of discourse will be presented in the sections which follow.

DIMENSIONS OF CLASSROOM DISCOURSE

In order to understand and study a major aspect of the instructional process, classroom discourse, it is necessary to identify conceptually important dimensions of classroom interaction and examine their interrelationships. By doing this we will be able to contrast dialogue occurring in different classrooms and maintain a basis for comparison in our investigations. Too many studies to date have focused on only one dimension of interaction, i.e., student participation, or they have developed global descriptions of teaching styles. One of the goals of this study was to delineate several important dimensions of classroom dialogue, to quantify related interaction variables, and study their interrelationships. The dimensions we examined were: (1) student participation, (2) teacher influence, (3) cognitive interaction, and (4) the verbal context of inquiry.

(a) Student Participation

Student participation in classroom discourse may be seen graphically by referring to the shaded areas in the matrix in Figure 5. Area A constitutes student participation in the total class dialogue, area B represents the student participation which follows teacher dialogue, while area C stands for the student-student interaction. When the non-cognitive categories are deleted from the interaction record, student-student interaction includes a sequence of cognitive operations performed by one student or by a series of students without substantial teacher interruption. For example, the coded

MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

MATRIX FOR 18 MAIN CATEGORIES

CATEGORY		TEACHER									STUDENT									TOTAL
		REQUESTS			NC		PERFORMS				REQUESTS			NC		PERFORMS				
		T1	T2	T3	T4	T5	T6	T7	T8	T9	S1	S2	S3	S4	S5	S6	S7	S8	S9	
TEACHER REQUESTS	T1																			
	T2																			
	T3																			
	T4																			
Noncog-nitive	T5																			
Performs	T6																			
	T7																			
	T8																			
	T9																			
STUDENT REQUESTS	S1																			
	S2																			
	S3																			
	S4																			
Noncog-nitive	S5																			
Performs	S6																			
	S7																			
	S8																			
	S9																			
TOTALS	CATEGORY																			
	SUB-DIVISION																			
	SPEAKER																			

B

C

A

FIGURE 5

STUDENT PARTICIPATION

dialogue below consists of five student-student cognitive interactions. The first interaction (S81-S81) is an exchange

R	P	NC
	S81	
	S81	
	S92	
		(T51)
	S81	
	S91	
	S81	

G: I believe that as long as hippies do not break any laws, they have the right to do what they want./

B: But the hippies do break laws./ In Look Magazine it said that most hippies have taken LSD, not only once but quite regularly and that's breaking the law./

T: John./

B: At the convention they broke the laws./ They were blocking up those streets down at the convention, blocking other people's lives, what other people wanted to do./ The hippies are always talking about their rights but they never think about what they are doing to other people's rights./

between two different students, while the second (S81-S92) consists of two cognitive operations performed by the same student. The third student-student interaction (S92-S81) consists of two students talking without substantial teacher interruption. Although the teacher has intervened between the two student operations by calling on a student (T51), this is a non-cognitive operation and therefore is not defined as substantial teacher interruption. The circled T51 is deleted when the non-cognitive categories are edited from the interaction record.

Area A, when quantified as a percent of the total interaction, is a gross indicator of the total amount of student participation in the discourse. Areas B and C are used to form the SS/TS ratio which measures the amount of sustained student cognitive interaction. The SS/TS ratio is calculated

by first deleting the non-cognitive categories (T5 and S5) from the interaction record, and then dividing the number of cognitive operations in Area B, student-student interaction, by the number of cognitive operations in Area C, student operations following teacher operations. An SS/TS ratio below 1.0 shows that over one-half of the student cognitive operations followed teacher cognitive operations, while an SS/TS ratio above 1.0 shows that over one-half of the student operations are in response to student comments.

The student participation for the 16 classes in our study is summarized in Table 3. One of the striking findings in this table is that the average SS/TS ratio for all classes is 1.43 and that eight of the 16 classes had ratios above 1.0. These findings are encouraging since they indicate that in these eight classes students carried on sustained cognitive interaction relatively free of teacher intervention. Sustained student development of ideas and positions is particularly important when one considers that the topics under discussion were controversial social issues. It is also interesting to note that the classes where the SS/TS ratio was over 3.00 were also the three classes, B, G, and I, which had the highest overall student participation. In classes C, F, and M where the students participated less than 20 percent of the time, the SS/TS ratio was only .06, .16, and .50 respectively. Very high total student participation thus tends to indicate a considerable amount of sustained student interaction while very low student

participation points to low student-student interaction.

TABLE 3

STUDENT PARTICIPATION

Classes	Student Verbal Participation As A Percent Of Total:		SS/TS Ratio
	Time	Operations	
A	60	55	.80
B	75	70	3.08
C	07	26	.06
D	48	43	1.06
E	65	24	.70
F	15	36	.16
G	74	67	3.97
H	64	50	1.02
I	70	66	3.95
J	48	38	1.40
K	60	56	2.47
L	32	41	.76
M	16	40	.50
N	61	50	2.05
O	28	35	.44
P	36	46	.40
AVG	48	46	1.43

When student participation is measured in terms of time, intellectual operations, or the SS/TS ratio, classes B, G, and I clearly emerge with the highest percentage. In these classes students rather than teachers are the dominant actors and account for over two-thirds of all classroom operations. The question is, however, how do the students spend their time? Are the performed operations inquiry-oriented (e.g., do they

emphasize categories S7, S8, and S9) or are they simply providing background information (e.g., do they emphasize category S6 responses)? A closer examination of these three classes in the distribution of relevant categories (from Tables 1 and 2) suggests some answers to the above questions. First, it is

	Class B		Class G		Class I	
Cat.	Time %	Frequency %	Time %	Frequency %	Time %	Frequency %
S6	3.7	2.0	21.6	11.1	8.6	2.4
S7	1.4	1.5	0.9	0.4	3.7	2.5
S8	37.6	27.0	29.1	27.3	30.2	26.4
S9	15.8	6.9	12.1	10.3	16.0	11.9

quite obvious that students with a high level of freedom of participation spend little time defining terms and clarifying propositions (S7). The percentage of the distribution given to clarification is negligible. This pattern applies to the students in all 16 classes in the sample, a pattern which would certainly disappoint some educational theorists who contend that clarification of meaning is the single most important operation in critical thinking.[4] Those educators who believe that hypothesis formation and defensibility of statements or grounding constitute the heart of the inquiry process will most likely be pleased

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[4]Maurice P. Hunt and Lawrence E. Metcalf, Teaching High School Social Studies: Problems in Reflective Thinking and Social Understanding, (New York: Harper, rev. ed., 1968). Also, see B. Othanel Smith and Robert Ennis, eds., Language and Concepts in Education. (Chicago: Rand McNally & Company, 1964).

with the performance of the students in these three classes.[5] In class B students spend 37.6 percent of the total classroom time in hypothesis formation and position taking (S8) and 15.8 percent in grounding (S9). Students in classes G and I do almost as well in the performance of these operations as students in class B. Class G, however, spends comparatively more time in exposition--i.e., giving background and summarizing statements.[6]

Of the other four classes, E, N, K, and A, which provide in one way or another a relatively high opportunity for student participation, class E points to some interesting observations. Class E ranks fourth from the top when percent of time for student verbal participation is examined, but it becomes the lowest when the frequency of operations performed by the students is considered, with 65 percent and 24 percent participation, respectively. The great discrepancy between this set of figures is explained by looking at Tables 1 and 2 and noting the kind of operations performed by the students--almost one-third of all student operations consisted of providing background information. This type of task consumed 57.9 percent of total class time or

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[5]Some educators who accept this position are Byron G. Massialas and Jack Zevin, Creative Encounters in the Classroom (New York: John Wiley & Sons, 1967); Edwin Fenton, The New Social Studies (New York: Holt, Rinehart and Winston, Inc., 1967).

[6]The higher incidence of student exposition in this class is explained by the existence of a student panel which provided background information on the topic before the general class discussion began.

about nine-tenths of total time of student verbal participation.[7] Inquiry operations, i.e., performance in categories S7, S8, and S9 were virtually absent. This case points to the importance of going beyond the student participation index to the specific nature of the discourse. Had we relied strictly on the ratio between teacher-student participation, as many other category systems do, we would have had to conclude that class E fares well. But when we consider the nature of the participation, this class can hardly be called "inquiry-centered." As we shall see when we examine additional data, participatory climate constitutes a necessary but not sufficient condition for inquiry.

We have examined some of the distribution patterns of verbal interaction in classes where there is a relatively high index of student participation. What is the nature of the verbal communication in classes where students are very low in participation? In those cases, how do the teachers spend their time? Below are given the classes which are the lowest in student verbal participation.

Percent of Student Participation (Based on Time)			Percent of Student Participation (Based on Frequency of Operations)		
Class	C	7	Class	E	24
Class	F	15	Class	C	26
Class	M	16	Class	F	36

[7] In this particular class students were asked to read from their textbooks. The reading of the textbook was recorded as S6, "Exposition."

Given the figures above it is clear that classes C and F provide, on both time and frequency of operations, very little opportunity to the student to contribute to class discussion. If we examine Tables 1 and 2 we find that in both classes the teachers spend a disproportionate amount of time in categories T1 and T6. That is, 51.5 percent of the total time in class E and 60 percent in class F is consumed by the teacher in either requesting or performing exposition-type operations. In class F it appears as if the teacher himself raises exposition-type questions (34.4 percent of the time) and then provides his own exposition-type answers (25.6 percent). This particular teacher seems to personify the utmost in monologic, non-inquiry behavior.

(b) Teacher Influence: Questions and Answers

Some educators contend that the nature of teacher questions is the key to the type of intellectual climate that will prevail in the classroom. One educator puts the proposition in this way: "An excellent way to attack this problem of over emphasis on memory is for teachers to use one of the taxonomies of questions....Bloom and his associates devised a classification system that defines seven kinds of thinking. A teacher can lead students to practice each of these forms of thought by asking specified kinds of questions in recitation, projects, homework, and examinations."[8] In a similar vein, another educat : states:

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[8]Norris Sanders, "Changing Strategies of Instruction: Three Case Examples," in Social Studies Curriculum Development, 39th Yearbook of the National Council for the Social Studies, ed. by D.M. Fraser (Washington, D.C.: The Council, 1969), pp. 151-152.

"The types of questions a teacher asks as he leads a student to look at the logical implications of his position holds the key to success."[9]

The educators quoted above and others of similar persuasion make a basic assumption about teacher and learning--that the questions a teacher asks in the classroom are of utmost importance since they determine the cognitive processes of students. This assumption is based on the idea that there is a high correspondence between questions raised by teachers and answers given by students. If the teacher asks a question, there must be an answer by a student. Furthermore, it is assumed that there is also correspondence in the nature of the question and answer exchange, i.e., if the question calls for an interpretation, the answer will be an interpretation.[10] These are certainly plausible claims but there is very little in the research literature to indicate whether there is indeed any correspondence between the frequency and type of teacher questions, on the one hand, and student response, on the other. There is virtually nothing in the way of empirical research to support the educators who purport that questions are the key to successful classroom performance. This section of the report makes an attempt to open up this area of investigation to empirical research and to explore whether or not such claims are supported by findings in live classrooms.

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[9]Fenton, op. cit., p. 44.

[10]Sanders, op. cit., pp. 151-152.

Table 4 provides data on the question-response patterns found in the 16 classrooms under study. The main concern here is to see what happens when the teacher asks a question. In order to see the relationship between the cognitive operations, the non-cognitive categories for both teacher (T50) and student (S50) have been deleted from the interaction record. The vertical axis represents the types of questions asked, beginning with T1 asking for exposition and ending with T4 asking for grounding. On the horizontal axis, the responses of both teachers and students are given in two sets of figures. The first number in each cell represents the actual number of tallies in that category, whereas the number in the parentheses ( ) is the percent of the responses to the question in that category.

Let us look at the performance of teacher B as an illustration. This teacher asked only two questions dealing with exposition. Both questions were answered in an expository mode, one answered by the teacher himself (T6) and one by a student (S6). Teacher B also asked 12 questions dealing with clarification and definition (T2). These questions seem to have elicited corresponding types of answers from the students, i.e., 6 or 50 percent of the total response was of the S7 variety, definition and clarification. Forty-two percent of the responses was T3 (teacher responds to his own questions by asking questions which call for hypotheses or positions). Only one entry or 8 percent of the total response is given by the teacher in the form of definition or clarification (T6). With T3 questions (asking for hypotheses and positions), teacher B elicits 74

TABLE 4 QUESTION-RESPONSE PATTERN FOR EACH CLASS

Class	Question	NUMBER (AND %) RESPONSES IN EACH CATEGORY*																Total
		T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	
A	T1	5 (13)	–	1 (3)	–	3 (8)	–	–	–	–	–	–	–	29 (74)	–	1 (3)	–	39 (100)
	T2	1 (7)	1 (7)	2 (13)	–	–	–	–	–	1 (7)	–	–	–	2 (13)	5 (33)	2 (13)	1 (7)	15 (100)
	T3	4 (8)	–	4 (8)	–	2 (4)	–	–	–	–	1 (2)	2 (4)	–	5 (10)	–	30 (61)	1 (2)	49 (100)
	T4	–	–	1 (20)	–	–	–	–	–	–	1 (20)	–	–	–	–	1 (20)	2 (40)	5 (100)
B	T1	–	–	–	–	1 (50)	–	–	–	–	–	–	–	1 (50)	–	–	–	2 (100)
	T2	–	–	5 (42)	–	1 (8)	–	–	–	–	–	–	–	–	6 (50)	–	–	12 (100)
	T3	–	–	3 (8)	2 (5)	–	–	–	–	–	–	–	–	2 (5)	2 (5)	28 (74)	1 (3)	38 (100)
	T4	–	–	1 (13)	–	–	–	–	–	–	–	–	–	–	–	2 (25)	5 (63)	8 (100)
C	T1	3 (9)	–	2 (6)	–	2 (6)	–	–	–	–	2 (6)	–	–	24 (73)	–	–	–	33 (100)
	T2	–	–	–	–	1 (14)	2 (29)	–	–	–	1 (14)	–	–	–	1 (14)	2 (29)	–	7 (100)
	T3	1 (3)	2 (6)	2 (6)	–	4 (11)	–	2 (6)	–	–	1 (3)	–	–	–	–	24 (67)	–	36 (100)
	T4	1 (25)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3 (75)	4 (100)
D	T1	–	–	1 (33)	–	–	–	–	–	–	–	–	–	2 (67)	–	–	–	3 (100)
	T2	–	1 (10)	1 (10)	–	–	1 (10)	–	–	–	–	–	–	1 (10)	2 (20)	3 (30)	1 (10)	10 (100)
	T3	–	–	1 (2)	–	4 (9)	–	1 (2)	–	–	–	–	–	–	–	36 (84)	1 (2)	43 (100)
	T4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4 (100)	4 (100)

* NOTE: Categories T5 and S5 have been deleted from the interaction record.

(cont. on next page)

Class	Question	NUMBER (AND %) RESPONSES IN EACH CATEGORY																
		T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	Total
E	T1	-	-	-	-	-	-	-	-	-		-	-	10 (90)	1 (9)	-	-	11 (100)
	T2	-	-	-	-	-	-	-	-	-	1 (25)	-	-	-	3 (75)	-	-	4 (100)
	T3	-	1 (25)	-	-	-	-	-	-	-	-	-	-	-	-	3 (75)	-	4 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	T1	8 (13)	2 (3)	1 (2,	-	8 (13)	-	-	-	3 (5)	-	-	-	38 (63)	-	-	-	60 (100)
	T2	1 (17)	-	-	-	-	-	-	-	1 (17)	-	-	-	-	4 (66)	-	-	6 (100)
	T3	1 (33)	-	-	-	-	-	-	-	-	-	-	1 (33)	-	-	1 (33)	-	3 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	T1	-	-	-	-	-	-	-	-	-	-	-	-	6 (100)	-	-	-	6 (100)
	T2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T3	1 (4)	-	3 (13)	-	-	-	-	-	-	1 (4)	-	-	2 (8)	-	16 (64)	2 (8)	25 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	T1	1 (13)	-	-	-	-	-	-	-	-	-	-	-	6 (75)	-	-	1 (13)	8 (100)
	T2	-	3 (25)	-	-	-	1 (8)	-	-	-	-	-	-	1 (8)	6 (50)	1 (8)	-	12 (100)
	T3	-	-	1 (2)	-	1 (2)	-	1 (2)	-	1 (2)	1 (2)	1 (2)	-	-	1 (2)	34 (79)	2 (5)	43 (100)
	T4	-	-	1 (8)	2 (17)	-	-	-	-	-	-	-	1 (8)	-	-	2 (17)	6 (50)	12 (100)

(cont. on next page)

TABLE 4 (cont.)

Class	Question	NUMBER (AND %) RESPONSES IN EACH CATEGORY																
		T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	Total
I	T1	-	-	-	-	-	-	-	-	-	-	-	-	1 (50)	-	1 (50)	-	2 (100)
	T2	-	-	-	-	-	-	-	-	-	-	-	-	1 (13)	4 (50)	2 (25)	1 (13)	8 (100)
	T3	-	1 (4)	-	-	-	-	1 (4)	-	-	2 (8)	1 (4)	-	-	1 (4)	18 (72)	1 (4)	25 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 (100)	1 (100)
J	T1	-	-	-	-	-	-	-	-	-	-	-	-	13 (93)	1 (7)	-	-	14 (100)
	T2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T3	-	-	-	-	-	-	-	-	-	-	-	-	1 (8)	-	12 (92)	-	13 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3 (100)	3 (100)
K	T1	-	-	-	-	-	-	-	-	-	-	-	-	1 (100)	-	-	-	1 (100)
	T2	-	-	1 (20)	-	1 (20)	-	-	-	-	-	-	-	1 (20)	1 (20)	1 (20)	-	5 (100)
	T3	1 (3)	-	2 (6)	-	1 (3)	-	3 (8)	-	-	1 (3)	-	-	-	1 (3)	25 (69)	2 (6)	36 (100)
	T4	-	-	1 (25)	-	-	-	-	-	-	-	-	-	-	-	-	3 (75)	4 (100)
L	T1	-	-	-	-	-	-	-	-	-	-	-	-	1 (100)	-	-	-	1 (100)
	T2	-	-	4 (25)	-	1 (6)	-	-	-	-	1 (6)	-	-	-	4 (25)	4 (25)	2 (13)	16 (100)
	T3	-	3 (7)	2 (5)	-	-	-	1 (2)	-	-	2 (5)	-	-	-	-	34 (81)	-	42 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 (17)	5 (83)	6 (100)

(cont. on next page)

TABLE 4 (cont.)

Class	Question	NUMBER (AND %) RESPONSES IN EACH CATEGORY																
		T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	Total
M	T1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T2	-	-	-	-	-	-	1 (50)	-	-	-	-	-	-	1 (50)	-	-	2 (100)
	T3	-	-	2 (12)	-	1 (6)	-	-	-	1 (6)	-	1 (6)	-	-	-	12 (71)	-	17 (100)
	T4	-	-	1 (25)	1 (25)	-	-	-	-	-	-	-	-	-	-	-	2 (50)	4 (100)
N	T1	-	-	-	-	-	-	-	-	-	-	-	-	1 (100)	-	-	-	1 (100)
	T2	1 (7)	3 (21)	-	-	-	-	-	-	-	-	-	-	-	8 (57)	2 (14)	-	14 (100)
	T3	-	2 (6)	4 (12)	-	3 (9)	2 (6)	-	-	-	1 (3)	-	-	3 (9)	-	16 (48)	2 (6)	33 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O	T1	2 (13)	-	-	-	3 (20)	-	-	-	1 (7)	-	-	-	8 (53)	-	1 (7)	-	15 (100)
	T2	-	-	-	-	-	-	-	-	-	-	-	-	-	2 (100)	-	-	2 (100)
	T3	1 (3)	-	3 (9)	-	2 (6)	-	1 (3)	1 (3)	-	1 (3)	-	-	-	-	22 (67)	2 (6)	33 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3 (100)	3 (100)
P	T1	1 (2)	-	3 (7)	-	-	-	-	-	-	3 (7)	-	-	38 (84)	-	-	-	45 (100)
	T2	-	3 (18)	1 (6)	-	-	-	-	-	-	-	-	-	-	11 (65)	2 (12)	-	17 (100)
	T3	4 (8)	1 (2)	6 (11)	1 (2)	1 (2)	-	-	-	-	-	-	-	4 (8)	-	33 (62)	3 (6)	53 (100)
	T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 (8)	11 (92)	12 (100)

percent of the total in the corresponding student performance category (S8). With T4 questions (asking for grounding), he still evokes 63 percent of the total in the corresponding student response category (S9). Certainly the degree of correspondence between teacher questions and student responses varies from class to class but on the average there seems to be general congruence between teachers' questions and the students' responses. Let us turn to Table 5 to obtain the overall class averages.

Of the four general types of questions that the teacher asks, T4 or request for exposition elicits the highest student response of the same intellectual mode. That is, 78.2 percent of what follows a teacher request for exposition (T1) is a student background or summarizing statement (S6). Requests for grounding (T4) and hypothesis (T3) are followed by relatively high performance in the corresponding student categories, with 77.3 percent and 68.7 percent of the total for each question, respectively. The figures in Tables 4 and 5 suggest that not only is there a high level of accommodative interaction between teacher and student but the interaction exhibits a relatively high degree of community since most of the questions and answers occur within the same cognitive category. Indeed, our data show that there is validity to the proposition that certain types of questions raised by the teacher will elicit corresponding kinds of responses from the students. If the question calls for hypothesis, exposition, or grounding, chances are that a corresponding answer in the respective category will be forthcoming.

TABLE 5

AVERAGE CLASS QUESTION-RESPONSE PATTERN

Question	AVERAGE PERCENT OF RESPONSES IN EACH CATEGORY																
	T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	Total
T1	4.2	0.2	3.4	-	6.5	-	-	-	0.8	0.9	-	-	78.2	1.1	4.0	0.9	100
T2	2.2	5.8	8.3	-	3.4	3.4	3.6	-	2.2	3.2	-	-	4.6	48.2	12.6	3.1	100
T3	3.8	3.1	5.9	0.4	3.3	0.4	1.7	0.2	0.5	2.1	1.0	2.1	3.0	0.9	68.7	3.1	100
T4	2.1	-	7.6	3.5	-	-	-	-	-	1.7	-	0.7	-	-	7.3	77.3	100

With regard to questions calling for definition or clarification, the response pattern in the respective categories is relatively low when compared with the response patterns of the other categories corresponding to the three questions. That is, only 48.2 percent of the responses in the average class is in the respective student category (S7). Of the other responses to question T2, 12.6 percent are in the form of student hypotheses (S8) and 8.3 percent consist of a teacher request for a hypothesis (T3). It is difficult to explain the relatively low response pattern to T2 questions. Perhaps the manner of questioning is ambiguous to the students and they are not sure how to respond to the question. Also, 26.7 percent of the response is preempted by the teacher who either raises new questions (16.3 percent) or responds to his own questions (10.4 percent). Perhaps, since the overall occurrence of operations which we call definition and clarification is so low (1.3 percent for the teacher and 1.6 percent of the total for the students), we are constrained in producing meaningful analyses and interpretations.

Diagramatically, the correspondence pattern between teacher question and student response is shown in Figure 6. Area C constitutes the student performance pattern in response to the four types of teacher requests. Area D represents the total teacher requests. Area C over Area D yields .69 for all classes which is the ratio of correspondence between teacher question and student response. This ratio is quite high and confirms the belief mentioned earlier that the questioning pattern on the part of the teacher is extremely important since

MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM
MATRIX FOR 16 MAIN CATEGORIES
NON-COGNITIVE CATEGORIES DELETED

CATEGORY		TEACHER								STUDENT								TOTAL
		REQUESTS				PERFORMS				REQUESTS				PERFORMS				
		T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	
TEACHER REQUESTS	T1																	
	T2														C			D
	T3																	
	T4																	
Performs	T6																	
	T7																	
	T8																	
	T9																	
STUDENT REQUESTS	S1																	
	S2																	
	S3																	
	S4																	
Performs	S6																	
	S7																	
	S8																	
	S9																	
TOTALS	CATEGORY																	
	SUB-DIVISION																	
	SPEAKER																	

FIGURE 6

CORRESPONDENCE BETWEEN TEACHER REQUEST AND STUDENT RESPONSE = $\frac{\text{AREA C}}{\text{AREA D}}$ = .69 FOR ALL CLASSES

it greatly influences the chain of verbal interactions in the classroom. Questions raised by the teacher will normally bring about related responses by the students. Therefore, if the questions deal with a topic in a significant manner, the responses are apt to be significant.

(c) Teacher Influence: Direct and Indirect

Besides asking questions, the teacher also affects the discourse through other actions. If he chooses, he can easily dominate the interaction by lecturing for an entire period or through frequent interjection of his own hypotheses, positions or supporting evidence into the discussion. Other influence techniques include giving directions, reinforcing the comments of students or providing criticism of student actions. In his studies of classroom interaction, Flanders classified various teacher actions in the classroom as having direct or indirect influence on the course of the classroom interaction. Teacher behaviors which he identifies as "direct" include lecturing, giving directions, and criticizing students, while "indirect influence" behaviors include asking questions, reinforcing students and using student ideas. He argues (and his findings substantiate his position) that teacher behaviors classified under "indirect influence" tend to promote student participation and give students the opportunity to become more influential while the behaviors subsumed under "direct influence" are ones which "tend to increase teacher participation and to establish

restraints on student behavior."[11]

In the current study we have followed Flanders' example of classifying teacher behaviors as direct or indirect and calculating and I/D ratio of indirect/direct influence on the part of the teacher. Although our teacher categories are not the same as those used by Flanders, they can easily be divided into direct and indirect groups parallel to his. The division of the teacher categories in the Michigan Social Issues Cognitive Category System into direct and indirect teacher influence is shown in Figure 7.

TEACHER INFLUENCE

FIGURE 7

Indirect Influence	
T1	Request for exposition
T2	Request for definition and clarification
T3	Request for position or hypothesis
T4	Request for grounding
T50	Request for non-cognitive operation
T52	Restatement of speaker ideas
T53	Acceptance or encouragement
Direct Influence	
T51	Directions and classroom maintenance
T55	Negative responses
T61-T62	Exposition
T71-T73	Definition and clarification
T81-T83	Positions and hypotheses
T91-T96	Grounding

The I/D ratio consists of dividing the time spent in the indirect influence categories by the time spent in the direct influence categories.

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[11]Ned A. Flanders, Teacher Influence, Pupil Attitudes and Achievement (Washington, D.C.: Department of Health, Education, and Welfare, Office of Education, 1965), pp. 20-21.

The I/D ratios of the 16 teachers in our study are summarized in Table 6. Teachers with I/D ratios above 1.0 use more indirect than direct influence while teachers with I/D ratios below 1.0 employ more direct than indirect influence. Six of the 16 teachers in our study, A, F, G, H, N, and P, may be characterized as indirect influence teachers; these teachers evidently spend most of their time asking questions and encouraging student discussion.

INFLUENCE STYLES OF TEACHERS

TABLE 6

Teacher	I/D Ratio	Teacher	I/D Ratio
A	1.40	I	.68
B	.98	J	.76
C	.39	K	.63
D	.49	L	.74
E	.24	M	.32
F	1.11	N	1.05
G	2.11	O	.46
H	1.33	P	2.33

AVG. = .88

Table 7 provides some insight into the relationship between student participation and the influence styles of the 16 teachers. Although the average student participation in the indirect teacher's class is higher than the average in the direct teacher's classes--52 percent versus 45 percent--it will be observed that the student participation in the classes of these six indirect teachers is not uniformly high. Looking at Table 7, we discover that not only do the students of two of the

STUDENT PARTICIPATION OF INDIRECT AND DIRECT TEACHERS

TABLE 7

INDIRECT TEACHERS			
Class	I/D Ratio	Student Participation (Time)	SS/TS Ratio
A	1.40	60	.80
F	1.11	15	.16
G	2.11	74	3.95
H	1.33	64	1.02
N	1.05	61	2.05
P	2.33	36	.40
AVG	1.56	52	1.40

DIRECT TEACHERS			
Class	I/D Ratio	Student Participation (Time)	SS/TS Ratio
B	.98	75	3.08
C	.39	07	.06
D	.49	48	1.06
E	.24	65	.70
I	.68	70	3.95
J	.76	48	1.40
K	.63	60	2.47
L	.74	32	.76
M	.32	16	.50
O	.46	28	.44
AVG	.57	45	1.44

indirect teachers, F and P, participate only 15 and 36 percent of the time in the class discussion but that the students of four of the ten direct teachers, B, E, I, K, participate more than 60 percent of the time. Why doesn't the generalization stated by Flanders that indirect influence on the part of the teacher tends to increase student participation while direct

influence tends to increase teacher participation hold for six of the 16 teachers in our study? The explanation may be found by looking at the SS/TS ratio. The two indirect teachers, F and P, who have relatively little total student participation in their classes, also have very low SS/TS ratios, .16 and .40 respectively. Although these two teachers are indirect in that they ask many questions and reinforce students, they do not allow sustained student development of ideas. Evidently what is occurring in these two classes is that after a student responds to a teacher question, the teacher does not wait for a second student to comment but again takes control and asks another question. On the other hand, the three indirect teachers (G, H, N) who have the highest total student participation in their classes also have SS/TS ratios above 1.0. These teachers allow considerable student-student interaction before they, again, step-in to influence the discussion by asking another question. Turning to the direct influence teachers, we also see the importance of sustained student interaction in increasing student participation. The classes of three of the direct influence teachers with relatively high total student participation (B, I, K) also have very high SS/TS ratios (above 2.0). Although these three direct influence teachers tend to participate in the discussion by offering their own observations and comments instead of primarily asking questions, they do demonstrate the capacity to withhold their intervention and allow considerable student-student dialogue.

Classes A and K present an interesting contrast and show the importance of both indirect influence and high student-student interaction on student participation. The teacher in class A uses indirect influence but allows relatively little student-student interaction (SS/TS ratio of .80) while the teacher in class K uses direct influence but allows relatively high student-student interaction (SS/TS ratio of 2.47). The end result is that in both classes students participate 60 percent of the time. Thus, it is apparent from our data that not only is indirect influence on the part of the teacher an important factor in increasing student participation, but also the willingness of the teacher not to influence the dialogue--either directly or indirectly--and to let the students interact with one another for sustained periods is crucial in promoting student participation.

(d) Cognitive Interaction

Let us now turn to the cognitive interaction in the classroom. One of the primary goals of this project was to develop a category system which discriminated between different levels of critical thinking. We were interested in highlighting verbal cognitive behaviors which were inqiury-based and went beyond the traditional classroom skills of simple exposition and recall. The result of this emphasis is reflected in the number of non-expository cognitive categories in Figure 8. The four diagonally shaded areas labeled E in the matrix represent discourse focused on exposition while the shaded areas labeled I depict the inquiry behaviors. Areas E_1 and E_2 are requests for exposition and

MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

MATRIX FOR 18 MAIN CATEGORIES

CATEGORY		TEACHER							STUDENT									
		REQUESTS			NC	PERFORMS			REQUESTS				NC	PERFORMS				
		T1	T2	T3	T4	T5	T6	T7	T8	T9	S1	S2	S3	S4	S5	S6	S7	S8	S9	TOTAL
TEACHER REQUESTS ↓ Noncog-nitive Performs	T1																			
	T2																			
	T3																			
	T4																			
	T5																			
	T6																			
	T7																			
	T8																			
	T9																			
STUDENT REQUESTS ↓ Noncog-nitive Performs	S1																			
	S2																			
	S3																			
	S4																			
	S5																			
	S6																			
	S7																			
	S8																			
	S9																			
TOTALS	CATEGORY																			
	SUB-DIVISION	E_1		I_1		E_2		I_2	E_3	I_3				E_4		I_4				
	SPEAKER																			

FIGURE 8

COGNITIVE INTERACTION

areas E_3 and E_4 consist of teacher and students providing exposition. Requests for inquiry behaviors such as definition, clarification, hypothesizing and grounding are represented by areas I_1 and I_3 and the performance of these behaviors by areas I_2 and I_4. The ratio of the time devoted to inquiry operations to the time devoted to exposition may be used to indicate the nature of the cognitive interaction. An inquiry/exposition ratio above 1.0 indicates that over one-half of the time spent in cognitive discourse is devoted to inquiry operations such as hypothesizing, clarification, definition, and grounding rather than to expository operations. Looking at the I/E ratios in Table 8, we find that 11 of the 16 social issues classes focus on inquiry interaction. These results are encouraging but not totally unexpected. Social issues by their very nature involve conflicting values and it would be surprising if every person in

INQUIRY/EXPOSITION RATIOS

TABLE 8

Class	I/E Ratio	Class	I/E Ratio
A	1.92	I	4.31
B	6.39	J	.85
C	.37	K	9.57
D	3.40	L	7.68
E	.17	M	.69
F	.10	N	7.14
G	2.41	O	2.04
H	2.47	P	1.91
AVG	3.21		

a given classroom agreed on the policy we ought to follow in Vietnam, whether or not abortion should be legalized, or the equity of the draft laws. Thus, it is logical to assume that discussion of these issues would evoke a variety of positions and hypotheses and that the classroom participants would make some effort to support their views. When this does not happen the issues are usually discussed in a very descriptive manner without any attempt to come to grips with underlying values or conflicting views. The five classes (C, E, F, J, M) which discuss social issues in an expository fashion should be the exception rather than the rule.

Just because a class has a high Inquiry/Exposition ratio does not necessarily mean that social issues are being dealt with in a probing fashion. It is quite possible that only a cathartic session is taking place; that is, everyone is throwing out positions and hypotheses, but no attempt is being made to examine the merits of any given position. Certainly it is important to get all views out in the open, but it is equally important for students and teachers to defend their points of view on grounds which can be publicly communicated.

Tables 9 and 10 provide information regarding the distribution of hypotheses and grounding operations in the 16 classrooms under study. Table 9 indicates that 95 percent of the teachers' hypotheses (T8) are non-prescriptive (T81) and, thus, can be confirmed or denied by drawing upon relevant data. The average performance of the students is much like that of the teachers with 96 percent of the total distribution invested

TABLE 9

DISTRIBUTION OF HYPOTHESES

Class	TEACHER HYPOTHESES								STUDENT HYPOTHESES							
	T81		T82		T83		Total		S81		S82		S83		Total	
	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%
A	11	100	-	0	-	0	11	100	81	100	-	0	-	0	81	100
B	9	100	-	0	-	0	9	100	162	98	3	2	-	0	165	100
C	11	100	-	0	-	0	11	100	27	100	-	0	-	0	27	100
D	14	93	1	7	-	0	15	100	89	97	2	2	1	1	92	100
E	5	100	-	0	-	0	5	100	3	100	-	0	-	0	3	100
F	2	100	-	0	-	0	2	100	1	100	-	0	-	0	1	100
G	1	50	1	50	-	0	2	100	60	81	14	19	-	0	74	100
H	8	89	1	11	-	0	9	100	76	93	5	6	1	1	82	100
I	14	100	-	0	-	0	14	100	92	81	20	18	1	1	113	100
J	9	100	-	0	-	0	9	100	34	100	-	0	-	0	34	100
K	14	93	1	7	-	0	15	100	77	97	1	1	1	1	79	100
L	7	100	-	0	-	0	7	100	66	99	1	1	-	0	67	100
M	11	100	-	0	-	0	11	100	28	97	-	0	1	3	29	100
N	4	100	-	0	-	0	4	100	57	100	-	0	-	0	57	100
O	14	100	-	0	-	0	14	100	35	100	-	0	-	0	35	100
P	8	100	-	0	-	0	8	100	47	98	1	2	-	0	48	100
AVG		95		5		0		100		96		3		1		100

TABLE 10

DISTRIBUTION OF GROUNDING

Class	TEACHER AND STUDENT GROUNDING CATEGORIES															
	T91+S91		T92+S92		T93+S93		T94+S94		T95+S95		T96+S96		T97+S97		Total	
	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%
A	7	29	-	0	1	4	-	0	1	4	14	58	1	4	24	100
B	12	28	1	2	11	26	1	2	1	2	15	35	2	5	43	100
C	2	40	-	0	-	0	-	0	1	20	2	40	-	0	5	100
D	1	3	1	3	3	9	3	9	2	6	23	70	-	0	33	100
E	2	100	-	0	-	0	-	0	-	0	-	0	-	0	2	100
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	7	23	2	7	-	0	1	3	3	10	17	57	-	0	30	100
H	25	51	-	0	1	2	-	0	5	10	16	33	2	4	49	100
I	23	40	6	11	2	3	1	2	2	3	21	37	2	3	57	100
J	8	35	3	13	-	0	-	0	-	0	12	52	-	0	23	100
K	24	36	3	4	3	4	1	2	-	0	36	54	-	0	67	100
L	7	22	-	0	-	0	-	0	1	3	24	75	-	0	32	100
M	9	56	1	6	-	0	-	0	-	0	6	38	-	0	16	100
N	12	33	-	0	1	3	-	0	1	3	22	61	-	0	36	100
O	13	48	1	4	1	4	3	11	3	11	6	22	-	0	27	100
P	11	46	-	0	1	4	2	8	-	0	9	38	1	4	24	100
AVG		39.3		3.3		3.9		2.5		4.8		44.5		1.3		100

in S81, "non-prescriptive" statements. It is revealing to observe that virtually no operations which we call "reassessment," i.e., re-evaluating a proposition in the light of new evidence, occur in our classes. This operation, which most theorists consider to be extremely important, is totally absent among teachers and occurs quite infrequently among students. The relatively low occurrence of T82 and S82 operations (prescriptive statements) is somewhat surprising especially since there is a prevailing notion among educators that classroom teachers and their students engage quite often in value judgments which cannot be subjected to any form of validation or confirmation. Obviously these data contradict this assumption. Overall, the distribution of the three kinds of hypotheses and positions does not discriminate among our classes since in 15 of the 16 classes at least 90 percent of the hypotheses are in sub-categories T81 or S81. Had there been a more varied distribution among the sub-categories certain evaluations about individual classrooms could have been made.

In contrast to hypothesis, grounding operations are more widely spread among the sub-categories. Table 10 which combines teacher and student operations shows that, overall, the most popular type of grounding is by reference to another position (96). Almost one-half of the total class grounding operations are of this kind. The next most popular operation with 39.3 percent of the total distribution is 91, grounding by citing general knowledge. At this point there is quite a drop in the distribution of frequencies from 39.3 percent for category 91 to 4.8 percent for category 95, grounding by pointing

to the logical consequences of a position. Personal experience (93) and appeal to authority (92) do not seem to be particularly popular grounding operations.

How do our distributions compare with the proposals for logical discourse advanced by educational theorists? The most often used category, grounding by citing other positions (96), is one that most theorists would not promote since it involves some circularity--one defends a position by pointing to another position which, in itself, may or may not be defensible. The "general knowledge" (91) category would be acceptable by most theorists as one which has a place in the inquiry classroom. In some of these cases certainly the context in which the type of grounding appears would be important, but unavoidably the use of category systems does not allow context to be introduced. As in the case of all studies using category systems, while there is a loss in contextual information, there is an advantage in being able to determine with some precision how efforts and time are invested in each classroom and on the basis of this to make some recommendations for change.

Most educational theorists would be pleased with the relatively low performance of the classes in the sample in category 97, no public grounds. It appears that most students and their teachers have accepted the value of providing reasons for their claims to knowledge or positions on social affairs. Certainly many of the grounds given for the positions may not be valid (e.g., 96) but they at least provide negotiable referents. No public grounds, however, reduces the position or hypothesis

to a matter of taste which by definition is not subject to any kind of validation or negotiation. It is quite revealing to see that very few classes, indeed, engage in this type of operation. In view of this preliminary finding, educational theorists may wish not to expend more effort in criticizing the existence of no public grounds in classes discussing various positions and hypotheses. Rather, they may want to invest their time in stressing the advantages of certain kinds of grounding in logical communication. For example, category 95, grounding by tracing logical consequences, is one that could apply well to confirming the validity of positions on issues. "If we provide federal legislation for open housing we will probably reduce the pattern of racial segregation existing in all of our cities" is an example of a statement which provides its justification by tracing one of the possible consequences of the proposed action. The consequences can certainly be false or illogical but these can be pointed out in the discussion. Other consequences, some of them possibly undesirable, may also be pointed out.[12]

If we assume that in the absence of 97-type operations the occurrence of grounding operations falling in category 96 is the least desirable, how do our 16 classes fare? In a

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[12]For an elaboration on grounding positions on social issues by tracing logical consequences, see Byron G. Massialas and C. Benjamin Cox, Inquiry in Social Studies (New York: McGraw-Hill Book Company, 1966), pp. 160-174.

previous analysis, classes B, G, and I ranked relatively high on the student participation index. Of these classes, B and I do have relatively low frequencies of circular grounding (96), with 35 and 37 percent respectively. Class G, however, has a higher than average percent of this type of grounding (57 percent). In this connection, it is interesting to note that classes H and O show the lowest scores on grounding operations of this type with 33 percent and 22 percent of the respective distributions. Yet these classes did not figure in any of the extreme ends of the student participation continuum discussed earlier. Generalizations about the three classes, which had the lowest amount of student participation, C and F, cannot be made because the total number of grounding operations is very small. As a matter of fact, class F did not engage in any grounding whatsoever.

The observations above confirm an earlier contention of ours that student participation indices, in and of themselves, do not provide sufficient information on the quality of the discourse. It is conceivable, and our data in part point in this direction, that a highly participatory class may invest its energies in non-inquiry operations. A class cannot be labeled an inquiry class if only the affective or participatory component is operative while the logical component is either inoperative or is on the negative side of the distribution. It follows that classes which appear somewhere on the middle of the student participation continuum, which we constructed earlier, may provide optimal environments for the conduct of inquiry.

(e) The Verbal Context of Inquiry

In the preceding section we examined the relationship between exposition and inquiry operations and the distribution of specific types of hypotheses and grounding. We found that 11 of the 16 classes in our study devote the majority of their operations to definition, clarification, hypothesis formation and grounding, but that these operations are concentrated in only a few sub-categories. In this section we are interested in the interrelationships between the inquiry operations themselves. What happens after a student gives a hypothesis or states a position? Is there grounding or clarification of the position? What appears to promote grounding and clarification?

Table 11 offers information concerning the cognitive operations that occur after a student presents a hypothesis or states a position. The total number of student hypotheses in each class is given in the far right column. The operations following the hypotheses are given in two sets of figures. The first number in each cell represents the actual number of times a student hypothesis was followed by the operation in that category, whereas the number in the parentheses ( ) is the percent of all the operations following hypotheses which were in that category. The average distribution of responses for all classes is at the bottom of the second page of the table. If we look at this average distribution we see that a student hypothesis is most frequently followed by student grounding, another student hypothesis, and teacher request for hypothesis, in that order of frequency. An average of 25 percent of the

TABLE 11

COGNITIVE INTERACTION FOLLOWING STUDENT HYPOTHESES*

Class	NUMBER (AND %) OF RESPONSES IN EACH CATEGORY																Total Number of Student Hypotheses
	T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	S3	S4	S6	S7	S8	S9	
A	4 (5)	7 (9)	17 (21)	3 (4)	1 (1)	-	5 (6)	-	-	2 (3)	-	-	6 (7)	1 (1)	22 (27)	13 (16)	81 (100)
B	1 (1)	6 (4)	15 (9)	5 (3)	4 (2)	2 (1)	5 (3)	-	-	2 (1)	7 (4)	-	4 (2)	-	84 (51)	30 (18)	165 (100)
C	2 (7)	-	10 (37)	4 (15)	5 (19)	1 (4)	5 (19)	-	-	-	-	-	-	-	-	-	27 (100)
D	2 (2)	5 (5)	20 (22)	3 (3)	8 (9)	-	8 (9)	-	-	-	-	-	1 (1)	1 (1)	21 (23)	23 (25)	92 (100)
E	-	-	-	-	2 (67)	-	1 (33)	-	-	-	-	-	-	-	-	-	3 (100)
F	-	-	-	-	-	-	-	-	-	-	1 (100)	-	-	-	-	-	1 (100)
G	1 (1)	-	11 (15)	-	3 (4)	-	-	-	-	2 (3)	6 (8)	-	6 (8)	-	22 (30)	23 (31)	74 (100)
H	1 (1)	3 (4)	14 (17)	4 (5)	4 (5)	-	3 (4)	-	2 (2)	-	2 (2)	-	-	-	18 (22)	31 (38)	82 (100)
I	1 (1)	4 (4)	7 (6)	1 (1)	8 (7)	1 (1)	4 (4)	1 (1)	-	2 (2)	10 (9)	5 (4)	1 (1)	3 (3)	32 (28)	33 (29)	113 (100)

* NOTE: Categories T5 and S5 have been deleted from the interaction record.

(cont. on next page)

TABLE 11 (cont.)

Class	NUMBER (AND %) OF RESPONSES IN EACH CATEGORY										Total Number of Student Hypotheses
	T1	T2	T3	T4	T6	T7	T8	T9	S1	S2	
J	1 (3)	-	2 (6)	1 (3)	4 (12)	-	2 (6)	1 (3)	-	-	34 (100)
K	-	1 (1)	11 (14)	1 (1)	2 (3)	-	-	-	-	-	79 (100)
L	1 (1)	9 (13)	14 (21)	6 (9)	3 (5)	-	3 (5)	-	-	-	67 (100)
M	-	1 (3)	5 (17)	2 (7)	4 (14)	-	2 (7)	1 (3)	-	3 (10)	29 (100)
N	-	1 (2)	11 (19)	-	3 (5)	-	1 (2)	-	-	-	57 (100)
O	-	1 (3)	9 (26)	2 (6)	4 (11)	5 (14)	2 (6)	1 (3)	-	-	35 (100)
P	10 (21)	4 (8)	11 (23)	8 (17)	1 (2)	1 (2)	2 (4)	-	-	2 (4)	48 (100)
Average for all classes	3%	4%	16%	5%	10%	1%	7%	1%	0%	1%	100%

entries following a hypothesis are student grounding operations and 17 percent are other student hypotheses. Only 16 percent consist of teacher requests for a hypothesis and even a smaller figure, 5 percent, account for teacher requests for grounding. The number of entries for student request categories (S1-S4) is also very low. This is a striking finding in that it points out that a hypothesis is followed in about one-third of the cases by spontaneous grounding. That is, students seem to move naturally from hypothesis to grounding without much teacher or other student intervention. Also surprising, but not to the same degree, is the fact that in 25 percent of the cases a student hypothesis is followed by another student hypothesis. This indicates that the same student is stating an uninterpreted series of hypotheses or another student is reacting to the first student and presenting his own hypotheses. It is somewhat disappointing that in 48 percent of the cases teacher and students together react to a student hypothesis by giving or asking for another hypothesis (T3, T8, S3, S8). Perhaps neither teachers nor students in the classes under study have yet internalized a central concept in inquiry; namely, public defensibility of claims to knowledge or value judgments. Perhaps what we are observing here is a recurrence of a pattern detected in an earlier section, i.e., students prefer to ground ideas by referring to other ideas. We attributed to this pattern of discourse some circularity which is not desirable in the inquiry process. As we look at Table 11 with an average of one-half the operations following a student hypothesis given to hypothesis-

type requests or responses, the same type of circularity that we observed when we studied the sub-categories within grounding seems to emerge. Although our analysis at this point is certainly not exhaustive, it does suggest that a key to the understanding of the conduct of inquiry in the classroom is to look into the degree of correspondence between logical discourse and the actual verbal conduct of the participants.

Table 12 gives us some indication of what verbal stimuli elicit grounding. Again confirming the findings indicated in Table 11, only a small number of entries, i.e., 43 entries or 10 percent of the total, pertain to teacher requests for grounding. The fact that 290 entries or 69 percent of the cognitive operations which preceded student grounding are in the form of student hypotheses also corroborates the earlier finding that student grounding follows spontaneously from hypothesis. The same observation applies to teachers. In their case, 67 percent of the operations preceding teacher grounding are teacher hypotheses or positions.

That grounding, especially student grounding, follows naturally from hypothesis without intervention is, in itself, desirable in the inquiry classroom. However, if grounding occurs spontaneously only one-third of the time and if most of the grounding operations involve circular reasoning, then more teacher intervention would be appropriate. This intervention, of course, would be appropriate only if the teacher asks for grounding and, in doing so, recognizes the logical distinctions among sub-categories of grounding and sees that emphasis

TABLE 12

COGNITIVE INTERACTION PRECEDING GROUNDING*

Category Preceding Grounding	TEACHER AND STUDENT GROUNDING BY CLASS																	
	A		B		C		D		E		F		G		H		I	
	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9
T1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
T2	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	1
T3	-	1	-	1	-	-	-	1	-	-	-	-	-	2	-	6	-	1
T4	-	2	-	5	-	3	-	4	-	-	-	-	-	-	-	1	-	1
T6	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
T7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
T8	1	-	1	-	1	-	2	1	2	-	-	-	1	-	1	-	5	1
T9	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
S1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
S4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3
S6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	1
S8	-	13	-	30	-	-	-	23	-	-	-	-	-	23	-	31	1	33
S9	-	1	-	3	-	1	-	-	-	-	-	-	-	3	-	5	-	8
Total Grounding	2	22	1	42	1	4	2	31	2	0	0	0	2	28	1	48	6	51

*NOTE: Categories T5 and S5 have been eliminated from interaction record.

(cont. on next page)

TABLE 12 (cont.)

Category Preceding Grounding	TEACHER AND STUDENT GROUNDING BY CLASS														Total Distribution Number (Percent)	
	J		K		L		M		N		O		P			
	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9	T9	S9
T1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1(.2%)
T2	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	7(2%)
T3	-	-	-	2	-	-	-	-	-	2	1	2	-	3	1(2%)	21(5)
T4	-	3	-	3	-	5	-	2	-	-	-	3	-	11	-	43(10)
T6	-	-	-	-	-	-	-	-	-	-	-	1	-	-		3(.7)
T7	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2(4)	1(.2)
T8	1	-	6	-	-	-	6	-	1	-	3	-	-	-	31(67)	2(.5)
T9	-	-	1	-	-	-	1	-	-	-	-	1	-	-	3(7)	1(.2)
S1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1(.2)
S2	-	-	-	-	-	-	-	-	-	-	-	-	-	1		3(.7)
S3	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1(2)	2(.5)
S4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1(2)	4(1)
S6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1(.2)
S7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	6(1)
S8	1	13	-	51	-	21	1	5	-	32	1	11	-	4	4(9)	290(69)
S9	-	5	1	3	-	4	-	-	-	1	2	-	-	2	3(7)	36(9)
Total Grounding	2	21	8	59	0	32	9	7	1	35	9	18	0	24	46(100)	422(100)

on one of these sub-categories rather than another will enhance the reflective enterprise in the classroom. As Chapters II and III indicate, however, teachers in general are not well acquainted with gross logical processes such as ability to distinguish fact from opinion. If teachers cannot draw such gross analytic distinctions, what happens to the finer distinctions that one must make in order to approach the inquiry model as discussed in Chapter I? Our research indicates that teachers do not measure up to the inquiry model. As a matter of fact, they do not even come close to it. In many cases it appears as if students perform more logical operations than teachers, and that many of these operations are not induced by the teachers but are developed spontaneously by the students.

As we mentioned earlier, operations dealing with definition and clarification are quite infrequent in the 16 classrooms which we have investigated in depth. The very few entries that we have in this domain, however, suggest a pattern which is diametrically different from that evinced in connection with grounding. As may be seen by examining Table 13, 61 percent of all operations preceding student clarification are requests for clarification by the teacher (T2). It is quite obvious that in this case the students have not yet internalized the value of clarification and definition of statements. This operation needs to be more or less induced by the teacher. Of course the number of total entries in this category is relatively small so that inferences about the pattern of interaction between teacher and student should be viewed with caution. On the basis of the

TABLE 13

COGNITIVE INTERACTION PRECEDING STUDENT DEFINITION AND CLARIFICATION

Categories* Preceding Def. & Clar.	STUDENT DEFINITION AND CLARIFICATION BY CLASS																Total Distribution Number (Percent)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
T1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	2(2%)
T2	5	6	1	2	3	4	-	6	4	-	1	4	1	8	2	11	58(61)
T3	-	2	-	-	-	-	-	1	1	-	1	-	-	-	-	-	5(5)
T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1(1)
T7	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	2(2)
T8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2(2)
S2	-	1	-	-	-	-	1	-	3	-	-	-	-	-	-	1	6(6)
S3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1(1)
S4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1(1)
S7	-	-	1	-	-	-	-	1	-	-	-	-	-	3	-	3	8(8)
S8	1	-	-	1	-	-	-	1	3	1	-	-	-	-	-	-	7(7)
S9	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2(2)
Total Def. & Clar.	7	9	3	4	4	4	1	10	11	2	3	4	1	14	2	16	95(100)

* Categories T5 and S5 have been deleted from the interaction record.

Errata

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TABLE 14

INQUIRY INTERACTION

Class	I/E Ratio	G/H Ratio	P/H Ratio
A	1.92	.26	.36
B	6.39	.25	.32
D	3.40	.31	.38
G	2.41	.39	.42
H	2.47	.54	.74
I	4.31	.40	.55
K	9.57	.71	.78
L	7.68	.43	.52
N	7.14	.59	.90
O	2.04	.55	.76
P	1.91	.43	.88
AVG	4.48	.44	.60

data we have, however, it is reasonable to assume that more teacher questions would have elicited more student statements providing definition or clarification.

How often are hypotheses in the classes in our study supported by grounding or clarified during the discussion? To answer this question the project developed two inquiry-probing ratios: a G/H ratio which is calculated by dividing the total number of hypotheses and positions in a class into the total number of grounding operations and a P/H ratio which consists of dividing the total instances of grounding, clarification and definition by the total number of hypotheses. The G/H and P/H ratios for each of the 11 classes characterized in the previous section as stressing inquiry behavior (I/E ratios above 1.0) are reported in Table 14. From this table it can be

TABLE 14

INQUIRY INTERACTION

Class	I/E Ratio	G/H Ratio	P/H Ratio
A	1.92	.26	.36
B	6.39	.25	.32
D	3.40	.31	.38
G	2.41	.39	.42
H	2.47	.54	.64
I	4.31	.40	.55
K	9.57	.71	.78
L	7.68	.43	.32
N	7.14	.59	.90
O	2.04	.55	.76
P	1.91	.43	.88
AVG	4.48	.44	.57

seen that on the average less than one-half of the hypotheses in these 11 inquiry-oriented classes are supported by any grounds or evidence. Only four of the classes, H, K, N, and O, ground 50 percent or more of their hypotheses. In all of the classes more effort is devoted to generating hypotheses than to supporting or exploring the validity of the hypotheses. This observation is also confirmed by the P/H ratios. Even when we add the operations of definition and clarification to grounding, none of the P/H ratios are above 1.0. In short, although 11 of the 16 classes in the study concentrate more on inquiry behaviors than exposition, these classes still have not internalized key components of the reflective process: definition, clarification, and evidencing.

SUMMARY

This chapter sought to find ways in which data collected through the use of the Michigan Social Issues Cognitive Category System can be presented and interpreted. The findings presented in this chapter are both methodological and substantive.

From the methodological viewpoint, the use of interaction matrices allows the researcher to look at the operations of the main actors in the classroom--teachers and students--and to analyze them meaningfully. The interaction matrices provide the investigator with the necessary data to answer important educational questions such as whether it is the teacher or student who usually dominates classroom discussion, which verbal operations elicit inquiry responses from students, the nature and quality of the inquiry response, and to what extent a participatory

classroom climate influences inquiry operations. The interaction matrices are based on the Michigan Social Issues Cognitive Category System and thus reflect all the basic assumptions about classroom interaction of that system.

The second important methodological contribution was the drawing of a distinction between the time spent in a given verbal operation and the frequency of the operation. This separation proved to be most valuable in that it provided for contrasts and different types of analyses. For example, certain operations occur quite often, but the actual time spent on them is relatively insignificant. We found this was particularly true of classroom management operations; they occur frequently but are of short duration. The fact that we identified a logical unit of discourse called an intellectual operation opened up an entirely new way of looking at the verbal interaction. We were able to analyze the sequence and interrelationships between these discrete intellectual operations and thus understand the flow of the logical discourse.

Substantively, there were many interesting patterns of interaction that emerged. Since our sample is not statistically representative, our findings here should be considered as tentative, subject to additional empirical testing.

Among the 16 teachers in our sample there is a great deal of variance in the performance of both cognitive and non-cognitive operations. For example, the time spent in non-cognitive operations varies from 5.7 to 37.6 percent of the total classroom time There is also considerable variance among classes in the extent of student participation in discussion. At one extreme,

the teacher monopolized discussion by talking 92.8 percent of the time. At the other, the teacher provided a great deal of opportunity for students to express their ideas--he talked only 23.9 percent of the time. Overall, teacher talk slightly exceeds student talk when both time and number of operations are considered. In this regard, although the teachers in the sample spent less time talking than teachers in other reported studies, as a group they still did not approach the optimal conditions for inquiry teaching that many educational theorists propose.

The most popular operations among teachers in our social issues classes are (a) non-cognitive and (b) requests for positions and hypotheses, in that order. The least popular are both requests for and actual performance of grounding operations. Among students, the most popular operations are (a) forming hypotheses and taking positions and (b) non-cognitive operations. Requests for grounding do not occur very often among students. Generally, both teachers and students seem to concentrate on the same type of operations in their first two choices.

This chapter directed considerable space to an examination of the climate of student participation and its relation to inquiry activity. Many educational theorists have maintained that a high level participatory classroom milieu will inevitably increase both the intellectual and affective components of the classroom dialogue. Our data suggest that the effects of classroom climate are varied and interpretations about them are not that simple. While we find that students in classes which

have a relatively high participation index interact with each other more frequently than students in classes with low total student participation, the direction and quality of the interaction are not always clear. Inquiry teaching has both cognitive and affective components. The existence of openness in discussion may provide the necessary affective component but openness and high levels of student participation alone will not suffice to bring about sophisticated logical discourse. As a matter of fact, the evidence in this chapter indicates that teacher intervention may help elicit certain intellectual operations such as definition. While some operations are performed spontaneously by students (e.g., grounding), we cannot assume that all operations will occur in the same manner. Definition-clarification is the kind of operation that does not occur often and needs to be developed by teachers and students.

Turning to the influence styles of the teachers, we investigated Flanders' concept of direct versus indirect teacher influence. Our findings indicate that the use of an I/D ratio to explain teacher influence may be too simplistic. For example, in his studies, Flanders has found that students in classes of indirect influence teachers tend to participate more than students in classes of direct influence teachers. Overall, our data tend to support this generalization; we found that students in classes of indirect teachers participate an average of 52 percent of the time, while students in classes of direct teachers participate an average of 45 percent of the time. But we also discovered that the relationship between indirect/direct influence and student participation is not consistent; that is,

there is clearly not a linear relationship between the amount of indirect influence and the amount of student participation. The problem with Flanders' concept of teacher influence is that it focuses only upon the mode of the teacher's verbal intervention (e.g., the indirect teacher asks questions while the direct teacher provides his own opinions and comments) and ignores the frequency of the teacher's intervention. Our data indicate that an important aspect of indirect teacher influence may be the teacher's ability to withhold his intervention and let the students interact with one another. A teacher who asks a question, obtains a response from a single student, then immediately asks another question, and so on, is certainly not as indirect as the teacher who asks a question and steps back and lets his students discuss the question among themselves for a sustained period of time.

Educational leaders have long maintained that the questions teachers raise in the classroom determine to a considerable extent the type of student response. If the questions are of a high cognitive level the answers will also be of the same high level. Our data indicate that there is .69 correlation between teacher questions and student responses. If the teacher asks for exposition, the chances are that he will get an exposition-type answer. The same teacher-student interactive pattern applies to hypothesis and grounding operations. The congruence we find between teacher-student, question-answer patterns is quite clear and suggests that the questions teachers ask may, indeed, affect the classroom discourse and determine to a large

extent whether or not a given classroom is inquiry-centered. Perhaps this finding may give us the basis for improving the quality dimensions of classroom dialogue. We know, for example, that reassessment of positions is not occurring in the average classroom. We also know that circular reasoning is far too dominant, and the incidence of definition-clarification is far too low. If the teacher can recognize the value of certain operations and begin to emphasize them by raising appropriate questions, he may succeed in bringing about optimum conditions for inquiry. If through questions he can train students themselves to raise high-level questions, he may also increase the student-student, question-answer, exchanges in the discourse.

CHAPTER VI

THE NEED FOR A SOCIAL ISSUES PERSPECTIVE

This study had two main goals: (1) to investigate the status of social issues instruction in secondary schools in Michigan, and (2) to develop a category system which can be used to determine meaningful verbal interactions in a social issues classroom.

In recent years the thrust of the educational reform has been directed toward making children and youth good scientists--historians, mathematicians, chemists, geographers, etc. Supported by the writings of Schwab and Bruner, each scholarly discipline began to identify its own "unique" concepts and methods of verifying knowledge and introduce them into the elementary and secondary schools. In the mid and late '60's the whole movement to introduce structure into the schools gained control and safely assumed a position in the curriculum.

The 60's also witnessed a period of social upheavel when issues such as war and peace, existing racial segregation, the increasing use of drugs, and the accelerating cleavage between the poor and the rich came to the forefront and were hotly debated. The issues were debated not only by armchair philosophers but by students and those who were affected by these social problems. Ironically, in spite of a pressing need to systematize the study

and analysis of social issues in schools, the curriculum based on the ideas of knowledge structure completely ignored them--at least in the materials produced for school use. In the new curriculum there was no evidence of a concerted effort to deal with social problems. Hence, this study was concerned with the gap between the disciplined-based curriculum and social issues, and set out to meet the goals stated above.

In order to accomplish these goals a survey of a representative sample of secondary school teachers in Michigan was conducted during 1967-68. The survey provided valuable information about social issues instruction and formed the basis for identifying the 16 teachers whose classrooms were studied in depth. Observations and tape recordings of the classes of the 16 teachers during 1968-69 and 1969-70 allowed the investigators to develop, refine, and apply in different settings the Michigan Social Issues Cognitive Category System.

Are Teachers Willing to Discuss Issues?

Our study found out that teachers in general do not devote much class time to the discussion of social issues. About 52 percent of the biology, English, and social studies teachers spend less than 10 percent of classroom time discussing these issues. Contrary to earlier studies, our survey did not find evidence that teachers are afraid of community or administrative sanctions when discussing social issues. The overwhelming majority of the teachers were willing to discuss most of the issues. The reasons given for not discussing issues were generally related to con-

siderations of their relevance to the subject matter at hand and the possible immaturity of the members of the class to handle them. Personal reasons were also given.

The teachers who have a high belief in student expression in the classroom are generally more willing to discuss the most controversial issues such as those related to sex. Male social studies teachers are more willing than other teachers to discuss issues in the classroom. On the basis of these data, however, it is difficult to develop a clear profile of the social issues instructor.

Can Traditional Teachers Discuss Issues?

The project developed a scale which indicates the extent to which a teacher believes in traditional socio-political values. The five statements which make-up the scale deal with the purpose of social studies, the importance of respect for authority, access to "questionable" literature, a teacher's responsibility to develop "correct" values in a student, and the notion that all nations should have the same form of government as the United States.

The teachers who score high on the scale of belief of traditional socio-political values (BTSV) are quite different in their handling of issues in the classroom from those who score low. The teachers with high BTSV scores have difficulty in distinguishing fact from opinion, an operation considered quite critical in the reflective analysis of issues. There is a tendency for high BTSV teachers to identify opinion statements as

facts if they happen to agree with them. While there is little difference between high and low BTSV groups in the number of issues or time spent in discussing them, the latter group is more willing to discuss any given topic than the former.

The study found that a teacher's belief in traditional values affects his selection and use of materials in the classroom. Teachers in the high BTSV group chose considerably fewer sources than the low BTSV group. The high BTSV teachers tend to use only these sources of information which do not present controversial viewpoints, are relatively easy to obtain and are fairly easy to interpret and understand.

An interesting discovery which contradicts some of the earlier findings in this field is that the overt controversial nature of the issue is not the main factor behind the reluctance of some high BTSV teachers to discuss certain topics. Evidently, teachers who score high on the BTSV scale are willing to discuss social issues as long as they think the issue is pertinent and are able to control the emphasis of the discussion. Just because a topic appears to be controversial does not mean that it is actually presented in the classroom as a controversial issue and discussed in a critical spirit. For example, a discussion of birth control could focus on descriptions of birth control programs throughout the world and ignore related value issues, such as the sanctity of personal privacy and the conception of human life. It is quite possible to discuss potentially highly controversial issues in a very safe, expository fashion.

Teachers with undergraduate majors in physical education, education, and the natural sciences (in that order) tend to have much higher BTSV scores than those with majors in the social sciences, English, history, and social studies. The longer a teacher has taught, the higher his BTSV score is likely to be. Also, teachers who live within the same community in which they teach have a significantly higher BTSV score than teachers who live outside the community.

The Development of a Cognitive Category System

A category system can be applied to classroom instruction in order to analyze the pattern of verbal interaction. This analysis may help the teacher improve his instruction or the researcher test certain hypotheses about teaching and learning.

The Michigan Social Issues Cognitive Category System has been developed in order to provide a basis for teacher feedback and to allow an investigator to study the dynamics of classroom verbal interaction. The Michigan Cognitive System is an attempt to link a theory of teaching with actual performance in the classroom. The theory of teaching is based upon the assumptions that underlie inquiry both as a cognitive process and as an instructional goal. Further assumptions on the role of the teacher in social issues instruction were made. The model of defensible partisanship was accepted. A strong component of this model was the idea that students should and could be active participants in the discussion of issues and that no issues, however controversial, should be automatically excluded from discussion by the teacher.

It should be noted that the investigators began their work with a highly sophisticated and rigorous scheme. This scheme was based on the works of leading theoreticians in the field including Hunt and Metcalf, Oliver and Shaver, and Massialas and Cox. During the process of visiting classrooms, however, it became evident that an armchair theory of teaching could not be applied to live classrooms without adjustments and reconsiderations. The gap between the theory and practice of teaching became obvious when the investigators tried to apply the category system they had constructed for the first time. The system, like many of the theories upon which it was based, was quite removed from the realities and the complexities of the classroom. Therefore, it became necessary to make numerous changes both in the number of categories and in the logical structure of the system. There were far too many fine distinctions between logical operations in the initial system. In an interaction matrix, where actual classroom observations were recorded, many cells consistently remained empty. In addition, the logical components of the system were initially too complicated to provide the basis for reliable recording by the coders. Given these difficulties and the investigators' firm belief that a system which purports to reveal the dynamics of the classroom must have an empirical base, the Michigan Cognitive System underwent a series of changes both in substance and in recording and coding procedures. The resulting system consists of nine basic categories. Eight of these categories are cognitive in nature,

while one category is non-cognitive and deals primarily with classroom psychological milieu and management procedures. The eight cognitive categories deal with exposition, definition, hypothesis formation or position-taking, and grounding. Four of these categories focus on questions raised in the classroom: the speaker makes statements requesting that another speaker perform a particular cognitive operation. The other four cognitive categories are performance categories; the speaker is actually performing a given cognitive operation.

With the changes noted above, the research team was able to obtain relatively high inter-coder reliability. The average reliability coefficient (applying Scott's formula) was .80. This figure indicates that there is high congruence of judgment between two pairs of coders using the Michigan Cognitive System to record verbal transactions in the classroom. As we applied the system in the 16 classrooms under study, we gained some assurance that the system is particularly sensitive to drawing distinctions (a) between simple and complex cognitive operations, (b) between grounded and ungrounded claims to knowledge or positions, and (c) between participatory and non-participatory classrooms.

The Dynamics of Classroom Instruction

Educators have long maintained that the kind of questions a teacher asks determines the kind of answer he receives from his students. In the absence of empirical evidence this idea has not been stressed in teacher preparation and training. The use of the Michigan Social Issues Cognitive Category System enables the investigator as well as the classroom teacher to

explore this proposition empirically. The data collected from the 16 teachers in the study indicate that there is indeed a relatively high correlation (.69) between teacher questions and student responses. If the teacher asks an expository question he should expect to receive an expository answer.

In addition to the general relationship between teacher questions and student responses, the category system allows the investigator to determine the pattern of verbal interaction in a given classroom. For example, in the classrooms under study, hypotheses advanced by students are followed in about one-third of the cases by spontaneous grounding. That is, students move naturally from hypothesis to grounding without intervention by the teacher or other students.

The category system also provides descriptive data about the frequency of intellectual operations and the time invested in them. It was quite revealing, for example, to find out that non-cognitive operations comprise 27.7 percent of all operations in the 16 classrooms. But it was equally revealing to observe that these operations consumed, on the average, only 13 percent of classroom time. These and similar findings led us to the conclusion that category systems which employ only a time-interval observation schedule (like the one by Flanders) or which are based only on frequency of logical operations (like the one by Smith and Meux), if used alone, do not provide an adequate picture of verbal interaction in the classroom.

The category system also allowed us to investigate several propositions concerning the influence style of the teacher and

participatory classroom milieu. In the 16 classes in our study we found that high levels of student participation are related both to the mode of teacher influence and to whether or not the teacher chooses to influence the discussion at all. Students in classes of teachers who influence the discussion primarily by asking questions and using student ideas participate an average of 42 percent of the time, while students in classes of teachers who influence the discussion primarily by offering their own comments and opinions participate an average of 45 percent of the time. On the other hand, students in classes where the teacher withholds any intervention and lets the students interact with each other for sustained periods participate more than students in classes of teachers who intervene frequently with either comments or additional questions.

Many educational theorists have maintained that a high level of participatory classroom milieu will lead to positive affect and increase students' cognitive ability. Our data suggest that the effects of high student participation on the direction and quality of interaction are not always clear. The evidence indicates that the existence of openness and relatively high levels of student participation alone will not suffice to bring about sophisticated logical discourse. There are some key logical operations which students in the 16 classes studied do not perform spontaneously; for example, reassessing positions, defining and clarifying concepts and terms. It may be that teacher intervention through appropriate questions is necessary

to bring about an improvement in selected inquiry skills.

Implications and Recommendations

There are several implications that can be drawn from the study. In this section we shall deal only with those which are the most salient. The implications and recommendations are addressed to four educational groups: teachers, teacher education directors, school administrators, and researchers. We are certainly not implying that these are entirely discrete groups and that the interests of one are not shared by the others. The identification of these implications under the four headings is mainly done to provide a focus for our recommendations.

(a) For Teachers

1. There is an urgent need to legitimize social issues instruction in the class. More time and effort need to be given to contemporary issues of society. The teacher needs to accept this type of activity as bona fide and not incidental to other learnings and objectives.

2. While there is no specific formula recommended here, if teachers value the processes and objectives of inquiry, they need to ask questions which generate hypotheses and value positions. Questions asking for grounding (mostly "why" questions) should follow hypotheses and positions.

3. Since there is evidence that relatively very little effort is put into clarifying the meaning of words or ideas, teachers need to address themselves more directly to these concerns. Definition and linguistic analysis should be a more

primary activity in the examination of social issues.

4. Our data indicate that many teachers talk too much in the classroom. Again, while no formula exists, teachers need to become conscious of the extent to which they monopolize classroom discussion. While teachers must provide direction in the initial stages of inquiry into issues by asking appropriate questions, there must be a point at which students, themselves, ask the important questions. One of the goals of inquiry instruction is to generate student-student rather than teacher-student intellectual challenge and response. Students need to be given the opportunity to think for themselves.

5. While the cognitive operations are important and need to be stressed, it is equally important that teachers maintain a supportive psycho-social classroom milieu. When there is encouragement on the part of the teacher and everyone has a sense of participation, then the conditions are appropriate for intellectual interchange.

6. There is a need to systematize feedback operations available to teachers. In the absence of a central service in the school, teachers should form teams trained in the use of category systems and observation schedules. Members of the team can visit each other's classroom and help one another in recording, transcribing, and coding the verbal transactions in the classroom.

(b) For Directors of Teacher Education Programs

7. Since there are certain personality characteristics of teachers which may not be conducive to social issues in-

struction, directors of teacher education programs may want to use appropriate instruments (such as the BTSV scale) to identify these traits. The information gathered from these instruments and appropriate counseling may help the prospective teacher assess alternate career choices.

8. There is a need to introduce systematic instruction on social issues in formal programs of teacher education. Teachers, regardless of their subject concentration, need to study certain social issues in depth. The study of such issues as race relations and integration, Vietnam, sexual problems, use of drugs, etc., need to be built into the college program of the teacher in a direct way. The most educationally desirable possibility would be to center concentration on a contemporary social issue, learn inquiry skills in dealing with it in the classroom, use original materials and not second-hand textbooks, and practice all this in an instructional setting under experimental conditions.

9. If social issues instruction becomes a legitimate component of teacher education programs, then provision for direct involvement in presenting issue-centered lessons should be made. This can be accomplished either by actual teaching in an internship setting or by using micro-teaching facilities. Whatever method is applied, teachers need to become familiar with relevant feedback instruments such as the Michigan Social Issues Cognitive Category System.

10. Along with practice in teaching, there needs to be both formal and informal types of instruction in (a) the range

of instructional roles available to teachers in the classroom, (b) the logic of disciplined discourse, and (c) the politics of change. Teachers should become aware, both in theory and in practice, of such role concepts as "defensible partisanship" or "ethical neutrality." Teachers need to be introduced to logical discourse and skills of social inquiry. They need to become aware of what constitutes a logical, psychological or material fallacy. Also, in order to be instrumental in change they need to be introduced to the research dealing with the politics of education--school power structure, the influence of pressure groups, political socialization of youth, teachers and students in politics, etc. Unless these topics are incorporated in a systematic fashion, the antiquated social foundations of education and methods courses will continue to dominate the undergraduate teacher education program and will prolong the irrelevance of the curriculum to instruction of contemporary social issues.

11. Teacher educators need to attend directly to increasing the opportunity for participatory behavior in the classroom. Students learn best when they are directly involved in developing and testing their own ideas. Formal education experience--both in the specialized disciplines of concentration and in pedagogy--need to provide opportunity for wide student participation. Category systems such as the Michigan Cognitive System can be used to provide valuable feedback to the teachers of teachers.

(c) For School Administrators

12. Since research indicates that the longer the period of teaching the more traditional the teacher becomes, administrators need to have a built-in system for self-renewal. Year-long workshops or seminars can provide the opportunity for training in (a) inquiry processes, (b) the substantive aspects of social issues, and (c) the use of category systems.

13. There is a need to encourage social issues instruction in classes other than the social studies and the humanities, e.g., biology, chemistry, mathematics, physical education, and home economics. Traditional reliance on social studies to deal with issues is not adequate. The school administrator needs to legitimize this type of instruction and to provide assurances that the study of social issues constitutes an indispensable component of the total school curriculum. The administrator's support should be demonstrated by appropriate budgetary allocations to strengthen this portion of the curriculum and the available materials which focus on social issues.

14. If social issues instruction in the classroom is to relate to larger problems, the administrator needs to provide a participatory milieu where important decisions about school affairs are shared by all--students, teachers, and administrators. Using the school as a laboratory for decision-making, students and teachers should be able to apply to the daily problems the concepts and skills learned in the social

issues classroom.

(d) For Researchers

15. The Michigan Social Issues Cognitive Category System is not presented as something absolute. It is possible that researchers using the System for special purposes will wish to refine it further or collapse or expand certain categories in it.

16. The System was designed primarily for use with tape-recorded classroom dialogue. While it has been used on a trial basis to code live classrooms, this application needs to be further developed. Certain adjustments in the coding procedures and coder training will have to be made.

17. In order to establish the status of social issues instruction in the United States, there is a need to collect data from regions other than Michigan. When data from representative samples throughout the country are available, then more meaningful and valid analyses and comparisons can be made.

18. Future research should use data collected through the application of the Michigan Cognitive System as independent and intervening variables and link them to such dependent variables as political efficacy or cynicism, activist orientation, growth in critical thinking skills, and scholastic achievement. It is desirable that these relationships be studied longitudinally.

19. There is a need to link more carefully teacher positions in the classroom and the student interactions obtained through the use of the Michigan Cognitive Category System. Personality and demographic characteristics of teachers should

also be related to the measures obtained through the application of the System.

20. There is a need to provide meaningful evaluation of teacher education programs and summer workshops. Researchers need to gain access to such programs and use the System to understand the impact that these programs have on teachers' cognitive, affective, and valuative performance.

21. It is clear from our research that categorized events of verbal communication are interdependent. Each event affects the probability that other events will follow. This project as well as others can make important contributions by studying two-way interaction chains, but in order to understand more clearly the flow and interrelationship of elements of classroom verbal dialogue, researchers should use data obtained from applying category systems (such as the Michigan Cognitive System) and search for longer interaction chains. Three-way or four-way chains would cut down the degrees of freedom and tell us much more than two-way chains about the overall flow of the discourse.

22. In order to reflect more accurately what is occuring in the classroom, researchers should make use of different types of interaction matrices and category systems. This project made some headway in this area by comparative use of both timed and operation matrices. A further development would be the simultaneous comparison of matrices resulting from the use of two different category systems; for example, one focusing on the cognitive elements and one focusing on the affective dimensions of the discourse.

23. One of the needs of teacher training programs is instantaneous feedback to teachers. Assuming that individuals could be trained to code live discourse using the Michigan Cognitive System, it would be possible to use computers to give feedback to a practicing teacher during an actual class discussion. As the class progresses, codes would be punched directly into a computer and the computer would, with little delay, read out the progress of the discourse. If, for example, a teacher was attempting to ask higher-level questions, the computer could plot the relationship between the number of simple exposition questions and the number of other higher-level questions asked by the teacher. This graph could be flashed on a viewing screen and the teacher would be aware of his performance as the class was progressing.

We hope that the report of this project will motivate both teachers and researchers to explore in more depth the questions and problems raised here. There is much more work to be done--this is simply a small beginning.

APPENDIX I

SAMPLING PROCEDURE

TABLE 1

SAMPLE DESIGN OUTLINE

Phase of Sample	Sample Population	Method and Source
I	60 secondary schools in Michigan	List of secondary schools compiled from Buyer's Guide containing names of all public and private schools in the state of Michigan. Random number table used to select 60 secondary schools from this list.
II	682 Michigan secondary school teachers of English, social studies and biology	Teachers' names provided by the selected schools' principals from phase one in the sample design. Principals were contacted and responded with the requested names by mail.
III	Approximately 20 teachers who met specified criteria	Individual responses of teachers to items contained on the MSITQ.

One of the objectives of the study was to gain information from secondary school teachers of biology, English and social studies in Michigan about their attitudes toward and methods of dealing with social issues in their classrooms. Since a list of all the teachers in Michigan was not available, but a list of all the schools was, it was decided to select a probability sample of secondary schools in Michigan and survey all

of the English, biology and social studies teachers in these schools. The sample goal was a return of at least 300 teacher questionnaires for purposes of statistical analysis. The Bureau of School Services at the University of Michigan advised the research staff that according to their best information secondary schools in Michigan would have an average total of ten English, social studies and biology teachers per school. Professor Larry Mohr of the Institute for Social Research of the University of Michigan advised our staff to expect (1) 10 percent of the schools contacted to refuse for one reason or another to cooperate with the study, and (2) 55 percent of the teachers who were eventually included in the sample to return the questionnaire. On the basis of the above considerations a sample of 60 schools was selected. If predictions were correct, that is, if approximately five schools did not cooperate and the 55 remaining schools had an average of 10 English, biology and social studies teachers, and 55 percent of 550 teachers responded, the resultant teacher return sample would be 302 teachers. This would satisfy the demand for 300 teacher questionnaires available for analysis.

The Michigan Education Directory and Buyer's Guide[1] was used to make a list of all the secondary schools in the state of Michigan. The Buyer's Guide lists all public and private

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[1]The Buyer's Guide was obtained from the Michigan Educational Directory, 701 Davenport Building, Lansing, Michigan 48911.

schools in the state as well as each school's principal, grades taught in the school, enrollment, and size of the faculty. For the purposes of our study secondary schools were defined as schools which include two or more of grades 7-12. For example, schools containing grades 1-7 were not included on our list, but schools containing grades 5-8 were included. Using a random starting point and table of random numbers, a probability sample of 60 schools was selected from the compiled list of secondary schools in Michigan. The selected 60 secondary schools constituted the first phase of the sampling procedure.

The second phase of the sampling procedure consisted of obtaining the names of the biology, English, and social studies teachers in the 60 schools. Fifty-seven of the 60 principals responded to our request to provide the names of their teachers. The total list contained 682 names, so in reality there turned out to be an average of 12 English, social studies and biology teachers per secondary school. The Michigan Social Issues Teacher questionnaire was mailed to these 682 teachers in the fall of 1967. The questionnaire return was also higher than anticipated with 72.3 percent, or 493 teachers, responding to the instrument. The sample exceeded minimum limits at each step and can be considered a valid probability sample of the English, social studies and biology teachers in secondary schools, containing two or more grades at the 7-12 level, of Michigan for fall 1967.

The third phase of the sample sought to identify approximately 20 social studies teachers from Michigan who

spent class time discussing social issues. These teachers were to be intensively studied, including classroom visits, taping of dialogue, and collection of supplemental student and teacher data. The desire to gather extensive data on the classroom selected for visitation, the amount of time required to collect the data, and the expense involved were the main reasons for the sample size. The teachers included in this phase of the sample design were selected from the 493 teachers responding to the Michigan Social Issues Teacher Questionnaire. The following criteria were used to select the teachers included in the third phase of the sample.

1. An indication on the MSITQ that the primary area of interest was social studies. (See Appendix II, MSITQ item 2.)
2. An indication on the MSITQ that controversial social issues consumed more than 25 percent of teaching time. (See Appendix II, MSITQ item 4.)
3. An expression of willingness on the MSITQ to participate further in our research. (See Appendix II, MSITQ item 27.)
4. A profile from indicated MSITQ responses. This profile was constructed from items contained in questions 12 and 13 on the MSITQ. (See Table 2, "Teacher Response Profile.")

One hundred and fifty of the 493 teachers who responded to the MSITQ identified themselves as social studies teachers. This criterion of selection was used because the second intensive gathering of data was designed to focus on a homogenous group of teachers in terms of subject area. Since many teachers handle classes outside their area of primary interest, this questionnaire item was constructed to focus on the dimension of primary interest, rather than simply asking for the number of classes taught in a discipline.

TABLE 2

TEACHER RESPONSE PROFILE TO

QUESTIONS 12-13 ON MSITQ

Item Taken From Questionnaire	MSITQ No.	Responses of Teachers Selected For Third Phase
a. "Reasons for opinions should be discussed openly."	12	"strongly agree," or "somewhat agree."
b. "Keep own opinions hidden under any and all circumstances."	12	"strongly disagree," or "somewhat disagree."
c. "Each student should be encouraged to keep his opinions private."	12	"strongly disagree," or "somewhat disagree."
d. "The most important objective of instruction should lie in helping the student develop evaluation skills and critical thinking."	13	"strongly agree," or "somewhat agree."
e. "A teacher should stick to the material and schedule in the official curriculum guide."	13	"strongly disagree," or "somewhat disagree."
f. "A major responsibility of the teacher is to be accessible to the students after class."	13	"strongly agree," or "somewhat agree."
g. "The students should be taught to examine the consequences of their statements."	13	"strongly agree," or "somewhat agree."
h. "Students should be encouraged to voice their opinions on all subjects."	13	"strongly agree," or "somewhat agree."

Twenty-six of the 150 social studies teachers indicated on their questionnaire that they spent more than 25 percent of their class time discussing social issues. All 26 teachers

expressed willingness to be involved in further research and responded in the manner specified to the attitudinal items criteria listed in Table 2. The responses of the 26 teachers to the selected MSITQ items from questions 12 and 13 are reported in Table 3. Because of cost and time considerations, plus the original government proposal specifications, which indicated approximately 20 teachers would be sampled, six teachers were randomly eliminated from the 26 teachers who qualified for this phase of the sample. The elimination of six teachers left 20 teachers in the sample. When contacted, all 20 teachers agreed to participate; however, the project was unable to collect data from three of the teachers: one person left teaching, one teacher moved out of the state, and one teacher could not continue with the research because of student problems not related to the research and financial difficulties in his school system. This left a total of 17 teachers. All of these teachers are included in the analysis involving student and teacher data, but one is not used in the analysis of classroom dialogue patterns. This one teacher was not included in the analysis of classroom dialogue because distance prevented the gathering of this particular piece of data.

Thus, the purposefully selected teachers constituting the third phase in the sample design stressed what the investigators considered were attitudes conducive to the classroom examination of social issues; considered social studies to be their subject area of primary interest, responded on the MSITQ that they spent more than 25 percent of their teaching time

discussing social issues, and indicated they would be willing to participate further in the work of the research project.

APPENDIX II

SURVEY INSTRUMENTS

Michigan Social Issues Teacher Questionnaire

Michigan Social Issues Student Questionnaire

Minnesota Student Attitude Inventory

Harvard Social Issues Analysis Test #2

MICHIGAN SOCIAL ISSUES TEACHER QUESTIONNAIRE

1. When teaching in your classroom, how would you rank the following issues on a scale of 1, 2, 3: (1) Non-Controversial; (2) Somewhat Controversial; (3) Highly Controversial. Please rank <u>all</u> of the issues below:

__ Federal Aid to Education
__ Race Relations and Integration
__ Marriage and Family Relations
__ LSD and "Pot"
__ Management-Labor Relations
__ Communist Ideology
__ Railroad Baron Era
__ Pornography and Its Control
__ Biological Evolution
__ Birth Control
__ Censorship
__ Vietnam
__ Artificial Insemination of Human Beings

2. Please underline any of the <u>above</u> issues which you would ordinarily discuss in class.

3. During the last month, have you discussed in class any issues, from the list below, which you consider controversial? Please check the issues you have discussed.

__ Federal Aid to Education
__ Race Relations and Integration
__ Marriage and Family Relations
__ LSD and "Pot"
__ Management-Labor Relations
__ Communist Ideology
__ Railroad Baron Era
__ Pornography and Its Control
__ Biological Evolution
__ Birth Control
__ Censorship
__ Vietnam
__ Artificial Insemination of Human Beings

If you have not discussed any controversial issues, please check here ___.

4. During the past month, what percentage of your total teaching time did you spend discussing issues which you consider controversial?

___ 0 -10% of teaching time
___ 10-25% of teaching time
___ 25-50% of teaching time
___ 50-75% of teaching time
___ 75-100% of teaching time

5. When students conflict with strong emotional overtones about a topic or issue being discussed in your classroom, what generally is your reaction?

(Please check only one)

a. ___ I let the discussion proceed, interrupting only to clarify points made.

b. ___ I take control of the direction of the discussion and explore the reasons for their disagreement in a more rational, less emotional manner.

c. ___ I stop the discussion.

d. ___ I use the vigorous discussion to involve students in a further investigation of the subject and the reasons for their disagreement.

e. ___ I let students argue their points without interruption from me.

f. ___ I moderate the discussion in an attempt to minimize the emotional conflict and have students argue in a more reasoned, less emotional manner.

6. Perhaps there are topics which you feel you should not discuss in the classroom. Following is a list of possible topics you might not discuss. Please check the ones you would not discuss.

__ Federal Aid to Education
__ Race Relations and Integration
__ Marriage and Family Relations
__ LSD and "Pot"
__ Management-Labor Relations
__ Communist Ideology
__ Railroad Baron Era
__ Pornography and Its Control
__ Biological Evolution
__ Birth Control
__ Censorship
__ Vietnam
__ Artificial Insemination of Human Beings

If you would discuss all topics, check here ___.

7. Following are some possible reasons you might not discuss some controversial issues:

a. Lack of class maturity
b. Administrative disapproval
c. Community pressure groups
d. Personal reasons
e. Parental criticism
f. Not pertinent to subject matter
g. Other (pleas specify)

_____ _____

Using the above reasons, (a,b,c,d,e,f,g), indicate why you might not discuss the topics below. More than one reason can be used for each topic.

__ Federal Aid to Education
__ Race Relations and Integration
__ Marriage and Family Relations
__ LSD and "Pot"
__ Management-Labor Relations
__ Communist Ideology
__ Railroad Baron Era
__ Pornography and Its Control
__ Biological Evolution
__ Birth Control
__ Censorship
__ Vietnam
__ Artificial Insemination of Human Beings

8. Suppose you were teaching a unit about population and birth control, which of the following materials would you ordinarily use.

(Please check any appropriate item)

a. __ Studies analyzing the population explosion, family planning, and birth control techniques

b. __ Books and pamphlets published in India, Pakistan, and Japan regarding national family planning

c. __ Material produced by independent non-profit organizations such as Planned Parenthood, World Population, Inter-Planned Parenthood Federation, Ford and Rockefeller Foundations

d. __ Standard texts

e. __ Material produced by pressure groups such as the Population Crisis Committee

f. __ Material prepared by religious organizations such as the Catholic Church

g. __ Reprints from popular magazines such as Time

h. __ Reprints from Congressional hearings such as those held by Senator Gruening's Committee on foreign aid expenditures and population problems

i. __ Material produced by government agencies such as the Children's Bureau and Bureau of Family Services in H.E.W., The Population Office of O.E.O. and AID

j. __ Papers critical of the over emphasis on population control

k. __ Material written by distinguished population scholars

l. __ Other (please specify) _____

9. Suppose you were teaching a unit about Communism, which of the following materials would you ordinarily use.

(Please check any appropriate items)

a. __ Standard textbooks

b. __ Original Communist sources (e.g., the Communist Manifesto)

c. __ Books and pamphlets published in the Soviet Union

d. __ Material produced by such organizations as the American Legion, Veterans of Foreign Wars, etc.

e. __ Material prepared by such organizations as the John Birch Society, the Christian Anti-Communist Crusade, etc.

f. __ Material produced by the American Communist Party

g. __ Material developed by professional educational associations such as the National Education Association, The National Council for the Social Studies, etc.

h. __ Material written by distinguished American scholars

i. __ Material written by distinguished Soviet scholars

j. __ Other (please specify) _____

10. Please briefly list one or more of the general reasons why you would use the materials you have just checked.

1. _____

_____

_____

2. _____

_____

_____

3. _____

_____

_____

11. In your opinion, which of the following materials are most trustworthy? (Please indicate any appropriate items by letter(s))

Letter(s): _____

12. Please check the column that seems closest to your feeling regarding controversial issues in the classroom.

(Only one check for each item)

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Reveal own opinions supported by reasons before unit of study is finished.				
All ideas should be publicly defended.				
Reasons for opinions should be discussed openly.				
Keep own opinions hidden under any and all circumstances.				
Some ideas should be accepted without any question.				
Each student should be encouraged to keep his opinions private.				
All value judgments are equally acceptable.				
The teacher should remain neutral to be objective.				
Some value judgments are better than others.				
The teacher can take a position and be objective, too.				

13. We would appreciate having your opinion on some statements. Please read each of the following statements and put a check in the box that comes closest to expressing your opinion. We are interested in your first thought, so check each statement as quickly as you can.

(Only one check for each item)

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
I feel that students should participate in class discussion every day.				
The main purpose of social studies courses is to teach students to be good and loyal citizens.				
The most important objective of instruction should lie in helping the student develop evaluation skills and critical thinking.				
Obedience and respect for authority are the most important virtues children should learn.				
Young people should not have too easy access to questionable literature.				
A teacher should stick to the material and schedule in the official curriculum guide.				

-Matrix continued on next page-

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
A major responsibility of the teacher is to be accessible to the students after class.				
The American system of government is one that all nations should have.				
A teacher has a responsibility to see that the students develop the correct values.				
The students should be taught to examine the consequences of their statements.				
Students should be encouraged to voice their opinions on all subjects.				

14. Please read the following statements and check the box that seems closest to expressing your feeling about the statement. We are interested in your first reaction, so read through the statements as fast as you can.

(Only one check for each item)

The statement is:	Fact	Mostly Fact	Mostly Opinion	Opinion
The participation of the federal government in local affairs leads to undesirable Federal controls.				
The American form of government may not be perfect, but it's the best type of government yet devised by man.				
American troops are presently fighting in Vietnam.				
Communism is evil.				
All American troops should withdraw from Vietnam.				
The United States ought to expend more federal funds on solving domestic problems rather than to spend so much on foreign commitments.				
Communism is a political and economic ideology.				

-Matrix continued on next page-

	Fact	Mostly Fact	Mostly Opinion	Opinion
All living things reproduce.				
Underdeveloped nations of the world should attempt to enter the industrial age.				
Every known society has had some means of communication.				
Students should be presented with at least the biological aspects of human reproduction.				
All American students should take English throughout their school years.				
All students ought to study literature in order to understand mankind.				

14. Does your school have a written policy statement concerning the treatment of controversial social issues in the classroom?

___ Yes ___ No ___ I don't know

For purposes of our research, we would like you to answer just a few questions about yourself.

15. How many years have you been teaching?

___ total number of years teaching

16. How many years have you been teaching in your present school system?

___ total number of years in present system

17. Are you on tenure? Please check.

___ Yes ___ No ___ School does not have provisions for tenure.

18. Do you belong to any local, state or national teachers' organizations? Which ones? Please check any that apply.

a. ___ No organizations

b. ___ Michigan Education Association and/or National Education Association

c. ___ Michigan Federation of Teachers and/or American Federation of Teachers

d. ___ Other, for example, such as American Historical Association, National Council of Teachers of English, National Association of Biology Teachers, Phi Delta Kappa, etc.

(Please specify other organizations) _____

_____

19. Is the school building in which you teach located in the community where you live? Please check.

___ Yes ___ No

20. Do you consider the community in which you teach to be mostly:

a. __ A farming community
b. __ A small town
c. __ A suburban area
d. __ A large city

21. We realize some of you might have several areas of responsibility; which area would you consider to be your primary interest? Please check one.

a. __ Biology
b. __ English
c. __ Social Studies
d. __ Coaching
e. __ Other (please specify) _____

22. What is your highest level of education?

	Major	Name & Location of College
Bachelor's Degree	_____	_____
	_____	_____
Master's Degree	_____	_____
	_____	_____
Specialist's Degree	_____	_____
	_____	_____

22. (cont.)

	Major	Name & Location of College
Doctor's Degree	_____	_____
	_____	_____
Other (please specify level or degree)	_____	_____
	_____	_____
_____	_____	_____

23. What is the date of your birth?

_____ ___ ___
Month Day Year

24. Sex. Please check.

___ Male ___ Female

25. Are you married and living with your (wife) (husband)--or are you widowed, divorced or separated or single? Please check.

___ Married and living with husband or wife
___ Widowed
___ Separated
___ Divorced
___ Single Male
___ Single Female

26. Race. Please check.

___ Caucasian
___ Oriental
___ Negro
___ Other (please specify)
_____

27. We will be contacting approximately twenty of the six hundred teachers receiving questionnaires for more comprehensive information.

If you would be interested in a possible contact, please check ____.

Thank you very much for your time and cooperation.

MICHIGAN SOCIAL ISSUES STUDENT QUESTIONNAIRE

1. When discussing social issues in this classroom, how would you rank the following issues on a scale of 1, 2, 3: (1) Non-Controversial; (2) Somewhat Controversial; (3) Highly Controversial. Please rank all of the issues below:

__ Federal Aid to Education
__ Race Relations and Integration
__ Marriage and Family Relations
__ LSD and "Pot"
__ Management-Labor Relations
__ Communism
__ Railroad Baron Era
__ Pornography ("Dirty" Books)
__ Biological Evolution
__ Family Planning
__ Censorship (Not allowing certain things to be published)
__ Vietnam
__ Religion

2. During the last month, have you discussed in class any issues, from the list below, which you consider controversial? Please check the issues you have discussed in class.

__ Federal Aid to Education
__ Race Relations and Integration
__ Marriage and Family Relations
__ LSD and "Pot"
__ Management-Labor Relations
__ Communism
__ Railroad Baron Era
__ Pornography ("Dirty" Books)
__ Biological Evolution
__ Family Planning
__ Censorship (Not allowing certain things to be published)
__ Vietnam
__ Religion

If you have not discussed any controversial issues in this class, please check.

Check here: ___

3. During the past month, what percentage of your total time in this class did you spend discussing issues which you consider controversial?

(Please check one)

___ 0 -10% of class time
___ 10-25% of class time
___ 25-50% of class time
___ 50-75% of class time
___ 75-100% of class time

4. When students conflict with strong emotional overtones about a topic or issues being discussed in the classroom, what generally is the teacher's reaction?

(Please check only one)

a. ___ She (He) lets the discussion continue and interrupts only to clarify points made.

b. ___ She (He) takes control of the direction of the discussion and explores the reasons for disagreement in a more rational, less emotional manner.

c. ___ She (He) stops the discussion.

d. ___ She (He) uses the vigorous discussion to involve students in a further investigation of the subject and the reasons for their disagreement.

e. ___ She (He) lets students argue their points without interruption from the teacher.

f. ___ She (He) moderates the discussion in an attempt to minimize the emotional conflict and have the students argue in a more reasoned, less emotional manner.

5. Perhaps there are topics which you feel should not be discussed in the classroom. Please check the ones you think should not be discussed.

___ Federal Aid to Education
___ Race Relations and Integration
___ Marriage and Family Relations
___ LSD and "Pot"
___ Management-Labor Relations
___ Communism
___ Railroad Baron Era
___ Pornography ("Dirty" Books)
___ Biological Evolution
___ Family Planning
___ Censorship (Not allowing certain things to be published)
___ Vietnam
___ Religion

If you would not object to any of the above topics being discussed, please check.

Check here: ___

6. Following are some possible reasons you might not want to discuss some controversial issues. Please read the reasons and then answer the next part using these reasons.

6. (cont.)

a. Class too young to discuss these topics

b. The principal might not like it

c. People or groups in your town might not like it

d. Personal reasons

e. Parents might not like it

f. Doesn't have anything to do with what we are studying

g. Other (please specify) _____

Using the above reasons (a,b,c,d,e,f,g), indicate why you might not want to discuss the topics below. More than one reason can be used for each topic.

__ Federal Aid to Education

__ Race Relations and Integration

__ Marriage and Family Relations

__ LSD and "Pot"

__ Management-Labor Relations

__ Communism

__ Railroad Baron Era

__ Pornography ("Dirty" Books

__ Biological Evolution

__ Family Planning

__ Censorship (Not allowing certain things to be published)

__ Vietnam

__ Religion

7. Suppose you were studying a unit about Communism, which of the following materials do you think your teacher should use.

(Please check any appropriate items)

a. __ Standard textbooks

b. __ Original Communist sources (e.g., the Communist Manifesto)

c. __ Books and pamphlets published in the Soviet Union

d. __ Material produced by such organizations as the American Legion, Veterans of Foreign Wars, etc.

e. __ Material prepared by such organizations as the John Birch Society, the Christian Anti-Communist Crusade, etc.

f. __ Material produced by the American Communist Party

g. __ Material developed by professional educational associations such as the National Education Association, the National Council for the Social Studies, etc.

h. __ Material written by distinguished American scholars

7. (cont.)

   i. __ Material written by distinguished Soviet scholars.

   j. __ Other (please specify) _____.

8. In your opinion, which of the foregoing materials are most trustworthy? (Please indicate any appropriate items by letter(s))

   Letter(s): _____

9. Please check the column that seems closest to your feeling regarding controversial issues in the classroom.

   (Only one check for each item)

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Reveal own opinions supported by reasons before unit of study is finished.				
All ideas should be openly discussed.				
Reasons for opinions should be discussed openly.				
Keep own opinions hidden under any and all circumstances.				
Some ideas should be accepted without any question.				
Students should be encouraged by the teacher to keep opinions to themselves.				
All value judgements are equally acceptable.				
The teacher should remain neutral to be objective.				
Some value judgements are better than others.				
The teacher can take a position and be objective, too.				

10. We would appreciate having your opinion on some statements. Please read each of the following statements and put a check in the box that comes closest to expressing your opinion. We are interested in your first thought, so check each statement as quickly as you can.

(Only one check for each item)

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
I feel that students should participate in class discussion every day.				
The main purpose of social studies courses is to teach students to be good and loyal citizens.				
The most important goal of instruction should be helping the student develop evaluation skills and critical thinking.				
Obedience and respect for authority are the most important virtues students should learn.				
It should not be too easy for young people to get questionable literature.				
A teacher should stick to the material and schedule in the official curriculum guide.				
A major responsibility of the teacher is to be available to the students after class.				

-Matrix continued on next page-

10. (cont.)

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
The American system of government is one that all nations should have.				
A teacher has a responsibility to see that the students develop the correct values.				
Students should be taught to examine the consequences of their statements.				
Students should be encouraged by the teacher to give their opinions on all subjects.				

11. We would appreciate your opinion on the following statements. Please read each statement, and check the statement that comes closest to expressing your opinion.

(Only one check for each item)

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
This class has helped me to increase my power of clear thinking about social problems.				
A good reason for not talking about some problems in class is because we don't know enough about them.				
This class has helped me to understand the difference between fact and opinion.				
This class has helped me to judge a social problem more on the basis of reason instead of emotion.				
This class has helped me to understand thoroughly the meaning of a statement.				
This class has helped me to determine when a statement should be believed or not.				

12. Please read the following statements and check the box that seems closest to expressing your feeling about the statement. We are interested in your first reaction, so read through the statements as fast as you can.

(Only one check for each item)

The statement is:	Fact	Mostly Fact	Mostly Opinion	Opinion
The participation of the federal government in local affairs leads to undesirable Federal controls.				
The American form of government may not be perfect, but it's the best type of government yet devised by man.				
American troops are presently fighting in Vietnam.				
Communism is evil.				
All American troops should withdraw from Vietnam.				
The United States ought to spend more federal funds on problems in the United States rather than to spend so much helping other countries.				
Communism is a political and economic system.				
All living things must reproduce in order to continue the species.				

-Matrix continued on next page-

	Fact	Mostly Fact	Mostly Opinion	Opinion
Underdeveloped nations of the world should attempt to enter the industrial age.				
Every known society has had some means of communication.				
Students should be presented with at least the biological aspects of human reproduction.				
All American students should take English throughout their school years.				
All students ought to study literature in order to understand mankind.				

13. How many classes have you had during the last two years in which you discussed controversial social issues? Please list the classes, the approximate percentage of time spent discussing controversial issues, and your opinion of the quality of the class using "excellent," "good," "average," or "poor."

Name of Class	Approximate Percentage of Time	Quality of Class
For Example: Biology	For Example: 50%	For Example: Excellent

14. On the average, about how many hours a week do you spend in extra-curricular activities?

____ Approximate hours per week

15. What is the date of your birth?

_____ ____ _____
Month Day Year

16. Please check: ___ Male ___ Female

17. For the past two years, what would you say is your approximate grade average?

____ Approximate grade average

18. Please check the occupation that best describes your father's job. One check only:

If your father is not living, please check here: ___.

__ Professional (for example: doctor, lawyer, dentist, etc.)

__ Semi-professional (for example: teacher, minister, librarian, etc.)

__ Farmer

__ Proprietor, manager (for example: office manager, owner of business, etc.)

18. (cont.)

__ Clerical sales (for example: accountant, salesman of insurance, etc.)

__ Craftsmen, foremen (for example: telephone repairman, factory foreman, etc.)

__ Factory worker

__ Domestic and service workers (for example: butler, janitor, taxi driver, etc.)

__ Laborer (for example: migrant farm laborer, etc.)

__ Not presently employed

MINNESOTA STUDENT ATTITUDE INVENTORY

This is not a test because there are no wrong answers. The answer to each question is A MATTER OF OPINION, and your true opinion, whatever it is, IS THE RIGHT ANSWER. You will be asked a lot of questions about how much you like this class, the teacher, and the work you are doing here. All the questions refer to THIS ONE CLASS AND THIS PARTICULAR TEACHER. By giving frank, true answers to show exactly how you feel, you can help us understand the opinions of students.

DIRECTIONS:

1. Please do not write your name on the answer sheet.
2. Do not skip any questions--answer each one carefully.
3. Make sure that the number on the answer sheet matches the question number when you mark your answer. Double check when you are asked.

HERE IS AN EXAMPLE

O. I think my homework is very hard.
SD--Strongly Disagree D--Disagree U--Uncertain
A--Agree SA--Strongly Agree

You have five alternatives to choose from. You might Strongly Disagree with the statement. If so, you would put an "X" in the SD box on your answer sheet, like this:

O.	SD	D	U	A	SA
	[X]	[ ]	[ ]	[ ]	[ ]
	e	m	l	b	j

If you felt UNCERTAIN about the statement, you would put an "X" in the U box on your answer sheet, like this:

O.	SD	D	U	A	SA
	[ ]	[ ]	[X]	[ ]	[ ]
	a	b	l	d	j

Or, for example, you might AGREE with the statement, but not STRONGLY. If so, you would put an "X" in the A box, like this:

O.	SD	D	U	A	SA
	[ ]	[ ]	[ ]	[X]	[ ]
	a	m	c	b	j

Pay no attention to the little letters under the boxes on your answer sheet.

And, DO NOT WRITE ON THIS QUESTIONNAIRE BECAUSE OTHER STUDENTS WILL HAVE TO USE IT.

1. This teacher asks our opinion in planning work to be done.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

2. This teacher keeps order with a fair and firm hand.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

3. I get along well with this teacher.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

4. I find it easy to talk to this teacher.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

5. This teacher never asks trick questions to show how dumb we are.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

6. Most of us get pretty bored in this class.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

7. This teacher never slaps us or handles us roughly.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

8. No one dares talk back to this teacher.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

9. This teacher is one of the best I have ever had.

   SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
   A--AGREE SA--STRONGLY AGREE

10. I just don't trust this teacher.

    SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
    A--AGREE SA--STRONGLY AGREE

11. It is easy to fool this teacher.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

12. This teacher makes sure WE nderstand our work.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

13. This teacher often sends boys and girls out of the room as punishment.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

14. This teacher really understands boys and girls my age.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

15. Our teacher is very good at explaining things clearly.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

16. Frankly, we don't pay attention to this teacher.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

17. This teacher has lost the respect of the class.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

18. Sometimes things "get out of control" in this class.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

19. This teacher certainly knows what he(she) is doing.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

20. This teacher often "bawls you out" in front of the class.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

21. This teacher makes it fun to study things.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

22. This teacher has some special favorites or "teacher's pets."

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

23. Our teacher never gives us extra assignments as punishment.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

24. This teacher wants to check our work to make sure we are on the right track.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

25. I really like this class.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

26. Sometimes I think this teacher is deaf.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

27. This teacher helps us get the most out of each hour.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

28. This teacher is cool and calm.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

29. In this class we fool around a lot in spite of the teacher.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

30. When I'm in trouble I can count on this teacher to help.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

31. This teacher becomes confused easily.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

32. This teacher will punish the whole class when he(she) can't find out who did something bad.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

33. This teacher thinks clearly.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

34. Some of the students are smarter than this teacher.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

35. This teacher lets us discuss things in class.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

36. It is fun to see how much we can whisper before we get caught.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

37. This teacher makes everything seem interesting and important.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

38. I wish I could get even with this teacher.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

39. This teacher knows a lot.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

40. This teacher is quick to see a new point.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

41. This teacher is too bossy.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

42. This teacher never gets angry and shouts at us.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

43. We often complain just to get out of work.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

44. If I could get away with it, I'd sure like to tell this teacher off!

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

45. This class is noisy and fools around a lot.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

46. This is the best teacher I have ever had.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

47. You can't walk around in this class without permission.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

48. It seems that somebody is always getting punished in this class.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

49. I wish I could have this teacher next year.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

50. This teacher has lots of fun with us.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

51. Sometimes just thinking about this class makes me sick.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

52. This teacher makes very careful plans for each day's work.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

53. This teacher helps students when they have problems with their work.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

54. Frankly, we just don't obey the teacher in this class.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

55. This teacher always takes time to find out your side of a difficulty.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

56. This teacher never pushes us or shakes us in anger.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

57. This teacher punishes me for things I don't do.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

58. This teacher likes to hear students' ideas.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

59. We behave well in this class even when the teacher is out of the room.

SD--STRONGLY DISAGREE D--DISAGREE U--UNDECIDED
A--AGREE SA--STRONGLY AGREE

FORM I - II

H A R V A R D S O C I A L I S S U E S
A N A L Y S I S T E S T #2

Inquiry into Social Issues
The University of Michigan
611 Church Street
Ann Arbor, Michigan 48104

Directions

This booklet contains several different types of tests which are designed to find out how well you are able to think about social issues.

DO NOT TURN THIS PAGE UNTIL INSTRUCTED TO DO SO.

Do not make any marks on this test booklet. All answers are to be made on the separate answer sheet provided. If you wish to change an answer be sure to erase your old answer completely.

I - II

Read the following conversation carefully. You will be asked several questions based on what you read. While answering the questions you may look back as often as necessary.

BEN AND ROB DISCUSS SCHOOLS IN THE SOUTH

Ben: The Supreme Court of the United States has said that Negroes have the right to go to school with whites, and those prejudiced Southerners are still trying to keep Negroes and whites in separate schools. This is a bad situation. People are being denied their rights, men are losing respect for the law, and worst of all, in many places, Negroes are too scared to stand up and demand what belongs to them.

Rob: You may say the Negroes are being denied their rights, but I say all the Southern States are being denied their rights. After all, who gave the Supreme Court the power to run the country's schools? Everyone knows that the states have the power to run their schools. The Federal Government ought to keep its hands off education.

Ben: That's easy enough for you to say. You're free, white and 21. But suppose you were some poor bug crawling in the dirt and whenever someone felt like it, he could crush you with his foot? How would you feel then? Pretty helpless--and that's how the Negro feels.

Rob: If you think the Negro is a bug, that's your business. All I know is that people in the South had its problems well under control when those Northerners on the Supreme Court came along with their half-baked ideas on equal rights.

Ben: What's so half-baked about equal rights? You might as well call the United States Constitution half-baked. What you are saying is that equal rights can mean one thing for the states, and another thing for the Supreme Court.

Rob: Now really, just because the Negro is treated differently doesn't mean he's not getting equal rights. The writers of the Constitution said nothing about forcing whites and Negroes to go to the same schools. They left that issue up to the states.

Ben: You mean to say that sending Negroes to school in broken-down shacks without running water is giving them equal rights and a fair chance? Common decency tells us that the kind of treatment the Negro is getting is bad. It doesn't have to be spelled out in black and white in the Constitution.

Rob: Obviously you and I have a different idea about what common decency is. The Negro is lucky if he gets any education at all. The people in each state have the right to decide what treatment the Negroes will get. After all, the people in the Southern States are closest to the problem; why not let them decide?

Ben: A criminal's friends are closest to him, but should we let them judge whether or not he has committeed a crime?

Rob: You really have me baffled. I don't see what judging criminals has to do with whites and Negroes going to separate schools.

Part A. Argument Summary.

On your answer sheet check the question which best describes what the argument is about.

1. a. Who should determine what equal rights for all means in public education?

   b. Is it important to determine what equal rights for all means in public education?

   c. What are the major problems in teaching Negroes and whites in Southern Schools?

   d. Should the Supreme Court or the writers of the Constitution have the final say about the meaning of equal rights?

   e. Do Negroes deserve to get as good an education as whites?

Part B. Ideas of Right and Wrong.

Ben and Rob disagree about some important ideas of right and wrong. On your answer sheet check the statement below which best describes their disagreement over what is right and wrong.

2. a. Is it better to lose some of your rights by making whites go to school with Negroes or let the Federal Government step in and guarantee equal rights for all?

   b. Should we let people at home work out their own problems even though some do not get full rights; or should we allow the Federal Government to step in and guarantee equal rights for all?

   c. Is it better for the Federal Government to improve the schools than to sit by and see the Supreme Court take away the rights of Southern States?

   d. Should we let the people at home work out their own problems even though some do not get a fair chance, or should we see that the states are guaranteed their Constitutional rights?

   e. Is it better to have peace and order in America's schools than to risk violence by having the Federal Government interfere in the name of equal rights?

Part C. Who Said What?

Items 3 through 7 describe in different words something Ben said in the argument, something Rob said in the argument, or something that neither or both might have said in the argument. On your answer sheet check B if you think Ben made the statement; check R if you think Rob made the statement. If you think neither or both might have made the statement, check Can't tell.

3. In the South, the Negroes are not getting the rights they deserve.

4. The Supreme Court has taken too much power away from the President and Congress.

5. We should be more sympathetic toward the position of the Negro in the South.

6. The Negroes in the South are afraid to claim those rights guaranteed to them in the Constitution.

7. What goes on in a public school is the business of the state government.

Part D. Supporting Statements.

Items 8 through 12 are statements of fact which you can assume are true. If these statements had been made at any time during the argument, do you think they would have supported Ben's position, Rob's position, or the position of neither or both? On your answer sheet check B if you think the statement supports Ben's position; check R if you think the statement supports Rob's position. If you think the statement supports neither or both positions, check Can't tell.

8. Between 1882 and 1955, 3,440 Negroes were lynched in the United States.

9. Southern states spend less money on public education than do the states in the North.

10. Roadell, an expert on American government, stated that the Supreme Court has the power to decide what rights belong to the American people under the Constitution.

11. De Toqueville, a noted student of American government, stated that local government is very important to American democracy.

12. Negro students are now allowed in many formerly all-white schools in the South.

Part E. Argument Reply.

Items 13 through 17 contain statements made by Ben or Rob in the argument. In this part of the test you are to check the two best replies which you might have made to each statement if you had been in the argument. The best replies are those which may clarify the disagreement or move the argument forward toward some agreement. Remember, for items 13 through 17, check the two best ways to answer each statement.

13. Everyone knows that the states have the power to run their schools. The Federal Government ought to keep its hands off education.

a. Shouldn't the Federal Government have something to say about the way Negroes are treated in the public schools?

b. The schools don't belong to the states; they belong to the nation; they belong to all the people.

c. Just who do you mean by everyone?

d. Just which states are you talking about?

e. On what basis do you make the claim that the Federal Government is forbidden to have some say in public education?

14. What you are saying is that equal rights has two meanings: one for the states, and one for the Supreme Court.

a. Let's clear up what we mean by equal rights before we go any further.

b. Equal rights has only one meaning; the one found in the Constitution.

c. The American Constitution makes it very clear what equal rights means.

d. Saying that equal rights has two meanings is not reasonable or logical.

e. Then we are arguing over whether equal rights includes mixing the races in the schools.

15. All I know is that the people in the South had its race problems well under control when those Northerners on the Supreme Court came along with their half-baked ideas on equal rights.

a. Would you spell out what you're getting at when you say "well under control?"

b. Where did you get the idea that their race problems were all under control?

c. The Southerners certainly did not have their race problems under control.

d. The Supreme Court gave the Negro his rights because the Southerners did not have their race problems under control.

e. Don't you think that the real point is what goes on in the schools and not what the Supreme Court thinks about equal rights?

16. Common decency tells us that the kind of treatment the Negroes are getting is bad.

a. What common decency means is just a matter of personal opinion.

b. What is your idea of common decency anyway!

c. Show me where the Constitution uses the words common decency.

d. Let's see if we can get an accurate description of the way Negroes are commonly treated in the South.

e. Let's stick to the point and discuss whether the races should be separated in the schools.

17. Suppose you were some poor bug crawling in the dirt and whenever someone felt like it, he could crush you with his foot. How would you feel then? Pretty helpless-and that's how the Negro feels.

a. Saying Negroes are like bugs is not a fair comparison.

b. There are many whites who are as bad off as the Negroes. Would you compare them to bugs?

c. The Negroes are not like bugs; they have good lawyers and have fought this issue through the courts.

d. Whether or not Negroes are like bugs has nothing to do with the argument.

e. How do you know that Negroes are so helpless?

APPENDIX III

DEVELOPMENT OF TEACHER ATTITUDINAL SCALES

INTRODUCTION

The secondary analysis of the data from the Social Issues Teacher Questionnaire involved the development of three attitudinal scales from related items in the questionnaire. The procedure followed is described below.

FACTOR ANALYSES

Several factor analyses using varimax rotation were performed on responses to the attitudinal items in questions 12 and 13 of the questionnaire. The factor analysis used the entire sample of responding teachers as well as several random sub-samples. Three stable factors emerged from the analysis and were identified by the investigators as: "Belief in Teacher Expressiveness," "Belief in Student Expressiveness," and "Belief in Traditional Sociopolitical Values."

The factors and the attitudinal items which consistently loaded at .45 or better on these factors are:

A. Belief in Teacher Expressiveness

Item	Loading (using entire sample)
(1) Reveal own opinions supported by reasons before unit of study is finished.	+.50
(2) Keep own opinions hidden under any and all circumstances.	-.54
(3) The teacher should remain neutral to be objective.	-.59
(4) The teacher can take a position and be objective.	+.50

B. Belief in Student Expressiveness

Item	Loading (using entire sample
(1) All ideas should be publicly defended.	+.49
(2) Reasons for opinions should be discussed openly.	+.45

For the factor, "Belief in Teacher Expressiveness," a range of scores from 0-12 was possible. These scores were utilized to assign individuals to three BTE groups.

BTE Scale Score	BTE Group	N
0-6	1	122
7-8	2	154
9-12	3	193

The higher a teacher's score, the greater his "Belief in Teacher Expressiveness."

For the factor, "Belief in Student Expressiveness," a range of scores from 0-12 was possible. These scores were utilized to assign individuals to three BSE groups.

BSE Scale Score	BSE Group	N
0-7	1	124
8-9	2	164
10-12	3	181

The higher a teacher's score, the greater his "Belief in Student Expressiveness."

For the factor, "Belief in Traditional Sociopolitical Values," a range of scores from 0-15 was possible. These scores were utilized to assign individuals to three BTSV groups.

BTSV Scale Score	BTSV Group	N
0-6	1	160
7-8	2	149
9-15	3	160

The higher a teacher's score, the greater his "Belief in Traditional Sociopolitical Values."

B. Belief in Student Expressiveness (cont.)

Item	Loading (using entire sample)
(3) I feel that students should participate in class discussion every day.	+.45
(4) Students should be encouraged to voice their opinions on all subjects.	+.50

C. Belief in Traditional Sociopolitical Values

Item	Loading (using entire sample
(1) The main purpose of Social Studies Courses is to teach students to be good and loyal citizens.	+.57
(2) Obedience and respect for authority are the most important virtues children should learn.	+.62
(3) Young people should not have too easy access to question-able literature.	+.45
(4) The American system of gov't. is one that all nations should have.	+.45
(5) A teacher has a responsibility to see that the students develop the correct values.	+.57

Using the above items, three scales were developed to measure the factors. A teacher's score on an attitudinal factor was calculated as follows:

$$\text{Score} = {}^{p}\Sigma_{1} \; (3(SA) + 2(A) + (D)) + {}^{n}\Sigma_{1} \; (3\,(SD) + 2(D) + (A))$$

where p = the items which load positively on the factor, n= the items which load negatively on the factor, SA = a response of strongly agree with the statement, A = a response of somewhat agree, D = a response of somewhat disagree, and SD = a response of strongly disagree.

APPENDIX IV

COLLECTION OF CLASSROOM DATA

METHODS OF COLLECTING CLASSROOM INTERACTION DATA

Research on classroom interaction and dialogue patterns has been hampered in the past by the limitations of research technology. Classroom dialogue involves complex verbal interaction and it is difficult to analyze discrete verbal operations as they take place in the live classroom.

Three alternatives were considered before making the final project decision of how to collect classroom dialogue information: a) analyzing "live" interaction as it occurred in the classroom, b) audio-taping and then later transcribing the dialogue, or c) video- and audio-taping. The advantages of each of these data collection methods are outlined below.

a) Live Classroom Coding

1. The coders have the actual experience of being in the classroom.
2. Live classroom coding saves cost of transcribing the classroom dialogue.
3. Time is saved by this method since codes are available immediately for analysis.

b) Audio-Taping

1. Improvements in quality of audio equipment allows recording and reproduction of classroom interaction with little or no loss of classroom dialogue.
2. The tapes as well as transcripts of the tapes are always available for later reference.
3. Transcribed tapes are available for coding by more than one pair of coders.
4. Tapes and transcripts allow coders to reflect and spend more time making judgments regarding codes.
5. Audio-taping facilitates change and development of instruments designed to analyze classroom dialogue because tapes are permanently available.

6. Equipment is portable enough to be transported between schools.

c) Video-Taping

This method had many of the same advantages of audio-taping but would also have allowed recognition of individual students.

The goals of the project were reviewed and the decision was made to use audio-recording equipment. We chose this method over live classroom coding because we were developing a cognitive category system and doubted that complex cognitive operations could be coded live. Also, the permanent record allowed us to recode the dialogue after modifying the category system. We did not video-tape the classes because the category system developed by this project focuses on verbal interaction in the classroom and the added expense and trouble of video-taping did not seem necessary.

RECORDING EQUIPMENT AND PLACEMENT

Alternate placements of the recording equipment and different types of microphones were tried during training sessions held at the University of Michigan Laboratory School. Based on the quality of the tapes recorded during this testing phase, the research team decided to use sensitive omni directional microphones carried by two researchers who pointed the microphone in the direction of the person speaking.

The research recording team also experimented with stationary microphones, but it was impossible to record all of the verbal interaction. Another option tried was a traveling microphone attached around the teacher's neck and stationary

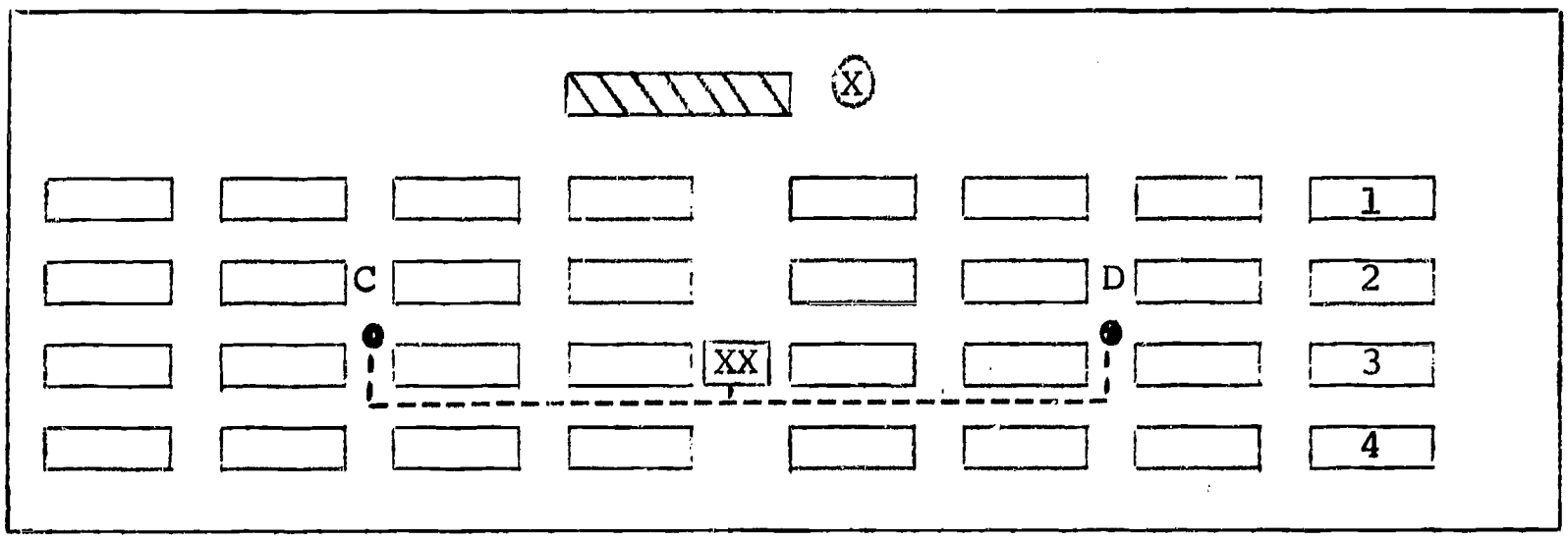
microphones placed around the room. Although this arrangement facilitated picking up the teacher's voice, it had several disadvantages: 1) teachers were not accustomed to teaching with a microphone hanging around their neck and most teachers found this recording technique awkward, 2) the use of four microphones required a microphone jack, and, consequently, diminished the power available to each individual microphone, and 3) the same problem still existed regarding the stationary use of microphones (i.e., it was impossible to record students who were not sitting close to the microphones). The possibility of using a boom or rifle microphone was also considered. This technique was discarded because the researchers decided the psychological disadvantage which results from pointing a long rifle microphone at a speaker would outweigh the advantages.

(1) Placement of Recording Equipment

In the classrooms taped for the study, the classroom organization encountered most frequently approximated the pattern in diagram A. As shown in the diagram, the teacher's desk was located at the front of the room and the student desks were placed in rows. The recorder was placed in the center of the room toward the back, preferably with an equal number of rows of desks on each side of the recorder. The two researchers walked between rows, and each was responsible for picking up the dialogue in two rows. Both researchers covered the teacher by moving toward the front of the room when the teacher was speaking. The researchers carried the

microphone in their hands and pointed the microphone in the direction of the person speaking. For example, in diagram A, if the teacher is speaking both researchers C and D moved toward the front of the classroom with the microphone aimed toward the teacher. If student "3" started to speak, researcher D moved back within at least three feet of the student and aimed the microphone toward him. Researcher C stayed toward the front of the room in his row, but aimed the microphone in the direction of student "3" while he was speaking. This recording technique minimized the amount of moving necessary to record the dialogue, left the teacher free to move around the classroom in his normal fashion, and produced an excellent tape.

PATTERN A



X = teacher

● = researchers w/mikes

= teacher desk

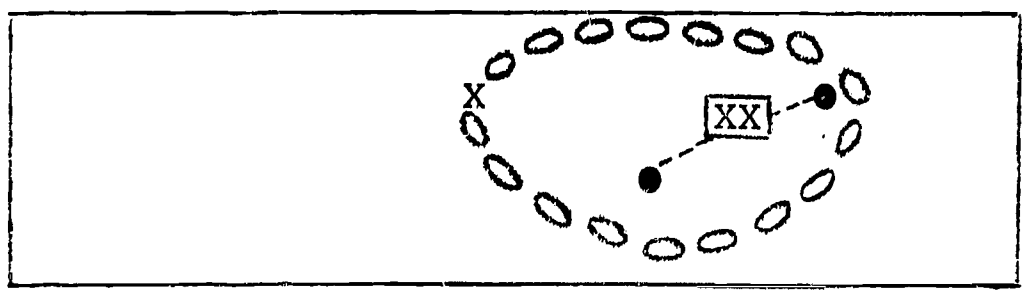
XX = recorder

--- = recorder cord

= student desks

Some of the classes were arranged in a circle and the teacher sat with the students in the circle. This classroom arrangement certainly has advantages for the teacher trying to involve the students in a discussion process, but presents certain problems for recording. The decision was made to place the recorder in the center of the room on the floor with the two researchers standing in the middle of the circle. This arrangement certainly was not ideal, but attempts to place the equipment and researchers outside the circle and record the dialogue were unsuccessful. The researchers could not pick up all the dialogue because they did not have enough time between student and teacher statements to move around the outside of the circle. Although we were concerned that the presence of researchers in the middle of the circle would distract the students and teacher, we found that this was not the case; teachers and students quickly become acclimated to the presence of the researchers within a circle. The tapes recorded in this manner picked up almost all of the class verbal interaction.

PATTERN B



X = teacher
O = students
● = researchers w/mikes
XX = recorder
--- = microphone cord

Modifications were made in the placement of the recording equipment where necessary to fit the classroom seating arrangement. The general rules followed include: 1) place the recorder so that the maximum amount of cord is available for the researcher's use to pick up everyone's verbal contribution, 2) place the recorder so that the cords do not restrict the movement of the teacher, 3) if possible, place the recorder in a central position so that the researchers have approximately the same amount of room space and number of students to cover.

(2) Recording Equipment Utilized

A Wollensak Stereo Tape Recorder (No. 5730, Serial #57302917)

Two 3M A0455 Microphone extension cords

One 3M power cord for 5730 Wollensak Tape Recorder

Two 636 "Slimair" Dynamic Microphones (manufactured by Electro-Voice, Variable Impedance Hi-Z)

The choice of microphones is very important and the "Slimair" was very satisfactory. Specifications for this microphone follow:

Specifications

Generating Element:	Dynamic omnidirectional
Frequency Response:	Uniform 60 to 13,000 cps.
Polar Pattern:	Omnidirectional
Impedance:	150 ohm and high impedance. 150 ohm impedance is balanced to ground. The microphone is wired for high impedance unless 150 ohm is requested.

Impedance Selection:	Selection is made at cable plug to change from high to 150 ohm impedance, move white lead at terminal No. 2 to terminal No. 3.
Output Level:	150 ohms, -58db*, EIA Sensitivity Rating, -152db. Hi-Z impedance, -58db, **EIA Sensitivity Rating, -54 db. *0 db equals 1 mw/10 dynes/cm^2 **0 db equals 1 volt/dyne/cm^2
Diaphragm:	Electro-Voice Acoustalloy
Case Material:	Steel
Dimensions:	Diameter, 1-1/8", length 10-1/4"
Finish:	Satin chrome. Also available in gold finish.
Net Weight:	15 oz.
Switch:	On-off switch, sliding contact shorts microphone element in off position.
Cable:	15-foot, 2-conductor, shielded synthetic rubber jacketed, broadcast type equipped with Model MC4M Amphenol connector.
Stand Coupler:	5/8 in. - 27 thread on stud
Optional Accessories:	418 S desk stand

TRANSCRIPTION OF TAPES

The tapes were marked with scotchtape indicating the date, teacher, class, and subject being discussed in the classroom. The tape was marked on the box and on the reel itself in case, during transcription, a tape was placed in the wrong box. Each teacher had a separate file and the transcribed tape was

filed under the individual teacher's code number. In transcribing the tapes the secretary listened to the tape at least twice. She first prepared a rough draft, then listened to the tape again, and inserted any dialogue missed or transcribed incorrectly the first time. The instructions given to the typist transcribing the tapes included the following:

1. Codes:

   Leaders (...) - use leaders whenever the dialogue is unclear. Whenever you use leaders, please estimate in seconds the length of the unclear dialogue. For example:

   B. ...6 they made it.

   would indicate that the first 6 seconds of the boy's statement was unclear.

   (Confusion) - wherever confusion occurs, please try to give some sort of explanation of the type of confusion. For example: (confusion-class laughter).

   (--) - use two dashes for interruptions. If a speaker is interrupted, put the dashes after his last word, and indicate the new speaker and his dialogue. After the interrupter completes his dialogue, if the speaker who was interrupted continues, begin his dialogue with dashes to indicate that it is the same speaker. If a new speaker begins, just begin it as new dialogue.

   T - Teacher is speaking
   B - Boy is speaking
   G - Girl is speaking
   CL - Joint response from the class
   ST - Indeterminable sex

2. After making all insertions or corrections, please type a final copy of the dialogue with 1 original and 4 carbons using the following format:

   Double space. Heading on all pages should include: teacher's code number, school, date of taping session and page number. Use a 2" left margin to allow space for later coding.

3. Collate and staple all pages.

4. Return final copy and tape to teacher's file.

An example of a page of transcribed dialogue is included:

EXAMPLE OF TRANSCRIBED DIALOGUE

#916 Page 1

_____ High School

February 15, 1968

T: All right, yesterday we were talking about civil disorders that are going on in the nation. We were trying to relate some of this to ourselves, and someone brought up the fact that (3 seconds--tape cut off) been accustomed to seeing any of this problem going on and we were beginning to get a few comments about whether we really were lucky or not living in a community where there is no color problem. And I wanted to get some of your ideas on this. Do you really think we are lucky?

B: No, you see when we're here, I've known some Negroes and they're just sort of different from us. You know what I mean.

T: ...1

G: What do you mean, how are they different?

B: Well, I don't know, I don't know how to act when I'm around them.

G: Well, that's just because we don't have any around here.

B: Yeah, but I've noticed that they're usually, for me, they're friendly to me, nice to know, but I just don't know how to act around them.

T: Of course, we don't live very far from an area that is highly concentrated with a Negro population in Benton Harbor. So in going to Benton Harbor, of course, you run into, you run into crowds of colored kids in the street. Do you feel any differently when you're there? Are you ah, on guard sometimes, Larry?

The coders worked from the transcribed copy and the 2" right-hand margin was used to record their codes. After the coders had completed the task of coding all of the teachers' transcripts they were asked for their suggestions concerning possible modifications which would have been helpful in the transcription process. They made several suggestions including the following:

1. When a question is asked and after waiting for a response the speaker answers his question or continues speaking, an indication of the pause would be included in the transcript. In this way the coder will know that the question was not intended to be rhetorical.

2. The typist could indicate the meaning of some words by punctuation. "Okay," for example, can be used in at least four ways: encouragement, calling on a student, question, or a conversational pause.

3. The transcriber could include such editorial comments as "said jokingly" or "speaker referring to someone other than previous speaker" when these are obvious to the person transcribing from the tape but could be missed by the coder reading from a transcript.

Future research studies might want to modify the transcription procedure to include some or all of these suggestions.

APPENDIX V

TRAINING AND SUPERVISION OF CODERS

Six individuals were responsible for coding the transcripts of classroom dialogue. One of the coders was assistant director of the project and the coding team coordinator, one was a full-time project staff member, and the other four were doctoral students in the Social Science Research Training Program at the University of Michigan.

The coders convened as a group for the first time in September 1968. During the first meeting the Michigan Cognitive Category System and coding procedures were explained. At this time the category system and coding procedures were close to, but not in, final form. For the next two months the coders met weekly to code transcripts of classroom dialogue. These transcripts were used for training only. During these weekly meetings:

(1) The coders learned the category system and its ground rules, practiced coding different examples of classroom dialogue, discussed discrepancies which occurred in coding the same dialogue, and gained experience responding consistently to the same communication events.

(2) The category system was revised. Several categories were added, deleted, or modified to satisfy two main requirements. First, the system should be able to handle all verbal events occurring in classroom dialogue. Second, the categories must be mutually exclusive so that a single event is reliably coded in one, and only one, category.

(3) Ground rules, or guidelines, were developed to aid in consistent coding when choices between categories occurred.

(4) Coding procedures were finalized.

After two months of training and working with the category system, the coders were randomly divided into three coding teams, two coders on each team. These pairs stayed together for five months of coding. The teams used the final version of the Michigan Social Issues Cognitive Category System and the technique of consensus coding, described in Chapter V, to code dialogue transcribed from the 16 social issues classes studied during the third phase of the project. Coding teams A and B each coded eight transcripts, while team C coded six of the 16 transcripts. Six transcripts were coded twice by two different teams to check for reliability between coding pairs.

Throughout the five months of coding, the six coders met approximately three times a month to discuss and work out unique coding problems. Several ground rules were added to the system as coding progressed.

At the last formal coder's meeting the coders were asked to evaluate various aspects of their task and offer suggestions regarding coding procedures and the training of future coders to use the Michigan Social Issues Cognitive Category System. The following is a summary of their comments:

1. Recruitment of Coders: The coders agreed that coders who use the category system need to be analytical and have some understanding of education and classroom discourse. It was also suggested that some type of critical thinking test be given to perspective coders to determine their understanding of basic logical operations.

2. Training of Coders: The coders thought that the fact that they had a role in formulating the category system and guidelines had an impact on their coding. During training sessions coding questions were discussed, and the coders were allowed to help determine the "best" code. The criteria used to reach these agreements were the category system and the guidelines. The coders agreed that coding would have been quicker and easier if precedents at the time of the training had been available. They felt that it would be helpful if an experienced coder were available to settle coding disagreements.

3. Coding Procedures: The coders recommended that a trainer-authority be present during coding so that the "authority" could answer questions, settle disagreements, and make determinations on the basis of precedents. They felt that future coders should listen to at least part of the tape of the classroom dialogue before coding in order to get

the spirit or atmosphere of the class. Consensus coding should follow every ten pages of individual coding rather than occurring after the transcript is complete; a few basic decisions early in the transcript might affect decisions on the remaining parts.

4. Coding Pairs: The six coders formed three teams and the teams have retained their original membership throughout the twenty-two transcripts. The coders felt that future coders should change team membership frequently; the fixed-team method allowed coders to anticipate their partner's codes and thus eliminates much of the reflection and discussion that should go into the formulation of a consensus code.

APPENDIX VI

CODING "LIVE" CLASSROOM INTERACTION WITH THE MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

The Michigan Social Issues Category System was originally designed for use with transcripts of classroom dialogue. The written transcripts provided permanent records which were necessary for the original development of the category system and adequate coder training. Although use of the transcripts enabled coders to reflect and spend more time making judgments regarding cognitive units, categories, and subcategories, we were aware that if eventually dialogue could be reliably coded "live" (i.e., without use of a transcript), the category system could be more widely used for feedback, training, and research.

After the coding teams were thoroughly familiar with the category system and had coded a number of transcripts, they reported that they frequently coded their own classes (all coders were doctoral students) and thought, with practice, they could reliably code "live" classroom discourse. Although we did not change our coding procedure for the classrooms included in the study, we did explore the possibilities and problems of coding "live" interaction. A class, taught by one of the teachers in the study, was taped and at the same time coded directly by two observers. Later, using the taped recording of the class, the two observers arrived at a consensus code. A second coding team, using a prepared transcript of the same class, also coded the discourse and arrived at a consensus code. When these two consensus codes were compared for reliability, the resulting Scott Coefficient was .54. This coefficient is considerably lower than the usual reliability found

between coding pairs.

What caused the relatively low reliability between codes based upon live classroom observations and those based upon the transcript? Although there was very little disagrement regarding the classification of similar units into categories, when we carefully examined the two sequences of consensus codes we found that those who coded the "live" classroom interaction divided the discourse into smaller units, and thus had many more units, than those who coded directly from the transcript. Generally, the observers coding "live" classroom interaction focused on very discrete thought processes. It may be that the concentration required to listen to each piece of the discourse as it occurs does not give the coder time to reflect on the entire train of thought or to mentally paraphrase the content. When coding "live," there is pressure to "keep-up," and observers may code parts of a statement before the entire statement is completed for fear of losing or forgetting information. People generally formulate their thoughts as they speak, and live coders tend to pick up the verbal fragments which formulate the whole thrust of the comments. In contrast, coders who have been trained to code from transcripts are used to the luxury of reflecting on the relationship between statements, and focusing on complete thoughts.

Although this experience indicated that our coders who were trained to code from transcripts have some dif-

ficulty coding live classroom interaction, it must be borne in mind that the observers did not have any previous training coding sustained periods of "live" dialogue. The fact that there was very little disagreement in the classification of cognitive units into categories is encouraging. It may be that with further coder training and experience dividing discourse into cognitive units, the Michigan Social Issues Category System could be used successfully for coding "live" classroom discourse.

APPENDIX VII

COMPUTER PROGRAM USED TO PRODUCE INTERACTION MATRICES

Interaction Matrix Program Description

Program to Eliminate Categories From Time Interaction Data

July 1969

INTERACTION ANALYSIS MATRIX PROGRAM

Programmer: Deagelia Peña
University of Michigan

Description:

This program produces matrices from Interaction Analysis Sequences. The input data for interaction sequences may be data recorded in any of the two ways: (1) as sequence of tallies taken at regular time intervals (traditional data), or, (2) as sequences of TALLY, TIME, TALLY, TIME, etc. (time may be recorded in any units without a decimal point).

The output for the first case are frequency counts in the cells of the matrix. In the second case, aside from the transition frequency matrix, the length of time spent in each category (steady state) is given below the matrix under the appropriate category column.

Limitation:

A maximum of 100 categories may be processed, and the output is an n x n matrix with n ranging from 2 to 100.

Option:

A. For both traditional and tally-time data:

1. Change of category-number names. For instance, if multiple coding was originally used in collecting data, the user may wish to collapse two or more categories into one category to get the appropriate frequency counts in the new category system. In this case, he provides the substitution pair of old (or replaced) category names and new (substitute category names).

2. Punched card for the frequency matrix of traditional data or the transition frequency matrix of the tally-time data. (See Punch format at the last part of this write-up.)

3. Mileage matrix for the frequency matrix of the traditional data or the transition frequency matrix of the tally time data. A mileage matrix is one whose frequency counts are relative to a matrix total of 1,000 (instead of 100, in a percentage matrix).

B. For the tally-time data only:

1. Time-components (sub-matrices) of specified total-time steady state cells in terms of states preceding, also specified by the user.

2. Conversion of tally-time data to the traditional fixed-interval data; the interval (say, 3 seconds) is at the option of the user. The computer "acts" as a human coder, tallying every three seconds, with the computer precision of course.

3. Time components (total matrix). This is the same definition as option B-1 above, except that the output is for all steady state cells, rather than for a selected few.

This matrix is similar to the frequency matrix in display, but each row indicates the component of time spent in each of the column categories when the latter is preceded by the row category. Thus an entry of 250 (or 25.0 seconds) in the (3-9) cell means that 25 seconds of the total time spent for category nine were preceded by category three. The column totals are the real time spent in each category. The row totals are identical to the column totals and are printed only for programming convenience; they have no significance to the matrix, since the row cells by definition of this option, are not additive.

Order of Sets:

A. First Data Set.
   1. Title Card - Punch desired title anywhere from columns 1 - 68 and 73 - 80; if no title is desired, leave these columns blank. Punch "99" in cols. 71 - 72.

   2. Control Card

Field Columns	Code	Definition
1	0	Fixed interval data
	1	Timed data, with absolute time in steady state cells desired (Ned)
	2	Timed data to be converted into traditional fixed interval (Option B.2)

Field Columns	Code	Definition
	3	Both (1) and (2) above desired
2	0 or blank	Punched freq. matrix not desired
	1	Punched freq. matrix desired
3-7	alph-numeric characters	ID characters to be punched on punch card
	Blank	If no punched cards desired or if no ID on punched card desired
8	0 or no punch	No mileage matrix desired
	1	Mileage matrix desired for either traditional or tally-time transition frequency matrix
	2	If mileage matrix for Option B.2 (conversion matrix) is desired
	4	If mileage for Option B.3 (Time Components Matrix) is desired
	3	Mileages 1 & 2 desired
	5	Mileages 1 & 4 desired
	6	Mileages 2 & 4 desired
	7	Mileages 1, 2, 4 desired
9-11	$2 \leq c \leq 243$	c = no. of categories; max = 243
12-14	$0 \leq p \leq 500$	p = no. of substitution pairs of categories; max = 500
15-16	$1 \leq n \leq 78$	n = no. of tallies per card (except last card)
17-20	Category code or -1	Desired initial (& terminal) category for matrix tally, e.g., silence code. If no initial category desired, punch -1 in cols. 19-20.

Field Columns	Code	Definition
21-22	1≤n≤78	n = no. of tallies on last card, if other than regular no. of tallies per card. Leave blank for timed data.
23	0 or blank	If any 2 columns on each card are either blank or contain the no. of tallies per card; they may be blank if cols. 15-16 contain this information, but should not contain any extraneous number.
	1	If otherwise, such as Prof. Massialas' data
24*	1	If components of time spent on some steady state cells are desired (Option B.1).
	0	If not desired.
25-27	0 999,or blank	Punch the length of fixed interval desired if tally-time data is converted to traditional fixed interval (Option B.2). Example: If the time unit used tenth of a second, and conversion is desired, then for a fixed interval of 5 seconds, punch 50 in cols. 26-27. If this field is blank the program automatically uses the three-second interval, if conversion is requested.
28	1	If time components for Total matrix desired (Option B.3).
	0 or blank	If not desired.

*This option is possible only for category names of not more than two digits, and max, no. of prededing states, and steady states is 20.

3. Category number-names card(s)

Field Columns	Code	Definition
1-4 5-8 9-12 . . . 77-80	category codes	The code nos. for correct (new) categories; e.g. if 27 categories are considered, there will be 27 fields punched. These names will also be used as column & row headings in the output matrix. One or more cards may be used.

4. Substitution card(s)

Field Columns	Code	Definition
1-4 5-8 9-12 . . . 77-80 four columns to a field; all 80 columns may be used.	category codes	Correct (or new) category first then old category to be re-placed. a max. of 20 cat. codes, or a max. of 10 pairs of substitution can be punched on one card. Zero or more cards may be used. (i.e., no card necessary if no substitution required.)

5 Format Card

The user supplies the format of his I.A. data. The codes are read by the computer as integers. In addition, two fields, I2, I3, in this order, are read by the computer after the tally fields. Hence, if the user is using traditional (not timed) data with 3 columns to a tally field, starting from column 1, the format might be (24I3,T74,I2,I3). These I2,I3 fields should either be blank, zero, or any positive number. Actually these fields are not used in processing but are read only to provide control for ending the processing. This will be clear in the description of the DATA DECK below. Usually the user has an ID field on the card; this then can be read as the I3 field. The I2 field is for the no. of tallies on the card; if greater than zero, it overrides the punch

in cols. 15-16 of the control card above. If he is using timed data with 4 columns to a tally field and 3 to the timed field, the format might be (11(I4,I3),I2,I3); usually for timed data, the I2 field is blank.

6. Time Components Cards (Only for timed data)

These are input cards supplied by users who want time components of certain total-time steady-state cells, in terms of preceding state (s).

(1) Control card for number of states

Field Column	Code	Definition
1-2	--	No. of preceding states to keep track of, for a set of steady states.
3-4	--	No. of steady states cells whose time components on preceding state (s) in col. 1-2, are desired.

(2) Card(s) for preceding and steady-state categories

1-2) 3-4) .) .) .) m-1 to m)	category names	Punch in fields of 2 columns, the category (number) names for the desired preceding state(s)
m+1 to m+2) .) .) .) n-1 to n)	category names	Punched in fields of 2, immediately following the m columns, the category names for the steady states.

*where m/2 = no. of preceding states.
n/2 = no. of steady states.

A total of 40 category names can be punced in one card. If the total exceeds 40, continue punching on the next card. There will be as many sets of control card (1) and card(s) for preceding and steady-state categories (2), above, as there are such sets desired.

(3) Signal Card: Card with "-1" punched in columns 1 and 2.

7. Interaction Data Deck(s)

Restrictions: No negative entries in any card within the I2,I3 fields defined by the format above. (For timed data, the last time punched on the last card should be 000.) In continuous punching from card to card, the pair of tally code and time may not be split between cards; each card should contain an exact number of pairs, except the last cards which may have from one to this exact no. The extra I2 field (cfr. FORMAT card) in the last card of a sequence deck should indicate the no. of tallies on that card.

a) If col. 23 = 1 and col. 1 = 0 in the control card (#2), a trailer (or signed card) should be placed immediately before the last card of each IA data deck. This trailer card has a "-1" punched in the I3 field of the format in card 5 (Massialas').

b) If col. 23 is 0, or blank, and col. 1 = 0, the last card of each IA traditional data deck is a trailer card with "-1" punched in the I2 field; if col. 1 ≠ 0, i.e., for timed data, there is no trailer card after each sequence.

If only one IA sequence is to be processed, the 8th card is a trailer card described in B.8 below. If there is more than one sequence, see B below, before putting the (8th) trailer card.

B. Next Data Set

1. Title Card: Punch desired title anywhere from from cols. 1 to 76. If no title is desired, leave blank. If the control information on card nos. 2-7 in this set are different from those in set A, punch "99" in cols. 79-80 and proceed as in A; otherwise, omit card nos. 2-7.

If the same control information is true for every IA deck, the order of the entire data deck is as follows:

1. Title card for 1st IA sequence.
2. Control cards 2-7.
3. IA deck.

4. Title card for next IA sequence.
5. IA deck.

6. Title card for next IA sequence.
7. IA deck.
8. Trailer Card: Punch -1 in columns 71-72.

Format of Punched Matrix Cards

Field Columns	Code	Definition
1-5	Alphanumeric	ID supplied by user in the control card.
6-9	Numeric	ategory code for the row.
10-13	Card Count	Card sequence no.
14-17) 18-21) .) .) .) 74-77)	Matrix row frequency tallies	Each card accommodates 16 entries for the designated row. If there are more than 16 categories, the punching is continued on the next card(s).

Inquiry into Social Issues
July 1969

PROGRAM TO ELIMINATE CATEGORIES FROM TIMED INTERACTION DATA

PROGRAMMER: Nancy Freitag Sprague
University of Michigan

I. DESCRIPTION

This program inputs sequences of timed interaction analysis tallies, eliminates specified categories and their accompanying time codes without destroying the sequence of tallies for the remaining categories, and produces punched cards for the edited interaction analysis tallies.

A maximum of 1,000 tallies may be processed for each interaction data deck. An unlimited number of separate data decks may be edited. A maximum of 50 different categories may be eliminated from any given data deck.

II. PROGRAM SET-UP

(1) $SIGNON SH59 T=____ P=____ C=____

(2) PASSWORD

(3) $RUN TIMED 1=*SOURCE* 6=*SINK* 9=*PUNCH*

(4) CONTROL CARD

Field Cols.	Code	Description
1-6	ALPHANUMERIC CHARACTERS	ID characters to be punched on punched cards
7-12	$1 \leq NTALLY \leq 1000$	NTALLY = the number of interaction tallies in data deck
13-14	$1 \leq ELIM \leq 50$	ELIM = the number of categories to be eliminated

(5) CATEGORY ELIMINATION CARD

1-4 5-8 9-12 . . . 77-80	category codes	The code numbers for the categories which are to be eliminated from the new interaction deck; one or more cards may be used

(6) INTERACTION DATA DECK

Steps (4) - (7) are repeated for multiple runs

(7) TRAILER CARD

After the last data deck there should be a trailer card with a 9 punched in col. 80.

(8) $SIGNOFF

III. FORMAT OF TIME INTERACTION CARDS (input as well as output cards)

Field Cols.	Punched
Code, Time	
1-3, 4-6	On each card 12 tallies with accompanying times are punched in cols. 1-72 (three cols. per tally and three cols. per accompanying time code)
7-9, 10-12	
.	
.	
.	
66-68, 69-72	
73-78	Alphanumeric ID characters
80	Card Number

APPENDIX VIII

SUMMARY OF CLASSROOM INTERACTION DATA FOR EACH CLASS USING MICHIGAN SOCIAL ISSUES COGNITIVE CATEGORY SYSTEM

Percent Distribution of Intellectual Operations in 52 Categories

Percent Distribution of Time Spent in 52 Categories

PERCENT DISTRIBUTION OF TIME SPENT IN EACH OF THE 52 CATEGORIES

	CATEGORY													
Class	T10	T20	T30	T40	T50	T51	T52	T53	T54	T55	T56	T61	T62	T71
A	5.9	1.3	10.0	0.9	0.0	2.8	1.5	1.1	0.0	2.3	0.7	5.2	0.0	0.1
B	0.5	0.9	5.9	0.8	0.2	2.7	1.2	0.7	0.0	0.1	1.6	3.8	1.7	0.0
C	7.0	0.9	11.9	0.4	0.7	16.3	3.1	1.2	0.0	1.5	0.7	44.5	0.0	0.4
D	0.5	0.5	9.7	0.1	0.9	5.8	2.0	2.8	0.0	0.6	0.0	16.5	0.2	0.6
E	3.7	0.4	1.1	0.0	0.0	4.9	0.2	1.1	0.0	0.0	0.0	17.6	0.0	0.2
F	34.4	1.6	1.0	0.0	0.6	12.6	5.1	2.8	0.0	0.6	0.0	25.6	0.0	0.2
G	1.2	0.0	11.9	0.0	0.5	4.0	0.0	1.4	0.0	0.0	0.0	1.5	0.4	0.0
H	1.1	1.8	9.9	1.4	0.0	2.8	1.9	1.4	0.4	0.2	0.1	3.7	1.1	0.0
I	0.4	1.2	7.3	0.2	0.3	2.7	1.3	0.6	0.1	0.2	0.0	3.0	3.8	0.0
J	5.2	0.0	9.5	0.1	0.1	8.3	0.2	1.1	0.0	0.0	0.0	17.8	2.2	0.0
K	0.0	0.4	11.1	0.2	0.0	4.4	0.5	2.0	0.0	0.0	0.0	5.7	0.3	0.0
L	0.1	2.7	13.0	0.6	5.9	17.4	6.1	5.7	0.0	1.3	0.0	2.6	2.3	0.0
M	0.0	0.0	4.2	0.4	1.4	5.0	1.1	3.2	0.4	0.3	0.1	48.7	0.6	3.0
N	0.4	2.9	13.1	0.0	0.1	8.2	1.6	1.1	0.0	0.0	0.2	1.1	5.6	1.3
O	3.5	0.5	13.5	0.4	0.0	6.9	1.8	2.1	0.0	0.2	0.0	18.6	0.9	1.1
P	10.5	2.9	20.0	1.2	1.5	6.5	2.4	2.2	0.0	1.0	0.0	1.6	4.8	0.8
AVG	4.7	1.2	9.6	0.4	0.8	7.0	1.9	1.9	0.1	0.5	0.2	13.6	1.5	0.3

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PERCENT DISTRIBUTION OF TIME SPENT IN EACH CATEGORY

	CATEGORY													
Class	T72	T73	T81	T82	T83	T91	T92	T93	T94	T95	T96	T97	S1C	S20
A	0.0	0.1	3.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.9	0.0	0.2	0.2
B	0.0	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.6
C	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.1
D	0.0	0.1	8.0	5.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0
E	0.0	0.0	1.7	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
F	0.0	1.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.4
G	0.0	0.5	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.9	0.3
H	0.0	2.5	1.8	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	1.3
I	0.0	0.4	3.9	0.0	0.0	1.4	0.2	0.5	0.0	0.0	0.2	0.0	0.3	1.2
J	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0
K	0.0	0.4	6.4	0.1	0.0	0.5	0.0	1.7	1.2	0.0	1.9	0.0	0.0	0.1
L	0.0	0.4	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
M	3.0	3.5	0.0	0.0	0.0	3.7	0.5	0.0	0.0	0.0	1.9	0.0	0.5	2.3
N	0.0	0.6	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
O	0.0	2.4	9.3	0.0	0.0	2.1	1.4	1.1	1.8	0.9	0.3	0.0	0.1	0.0
P	0.0	1.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
AVG	0.2	3.9	3.3	0.3	0.0	0.7	0.2	0.2	0.2	0.1	0.4	0.0	0.4	0.5

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PERCENT DISTRIBUTION OF TIME SPENT IN EACH CATEGORY

	CATEGORY													
Class	S30	S40	S50	S51	S52	S53	S54	S55	S56	S61	S62	S71	S72	S73
A	0.5	0.2	0.0	0.0	1.1	0.7	0.2	0.8	11.9	12.0	0.8	0.0	0.0	0.6
B	1.8	0.0	0.0	0.3	2.2	1.4	0.3	1.0	7.4	3.8	0.0	0.0	0.0	1.3
C	0.0	0.0	0.0	0.1	0.1	0.3	0.2	0.4	0.3	1.8	0.0	0.2	0.0	0.0
D	0.0	0.0	0.0	0.3	0.4	0.3	0.1	0.1	0.2	1.7	0.0	0.0	0.0	1.1
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.9	0.0	5.8	0.0	0.0
F	0.0	0.0	0.8	0.2	0.1	0.6	0.2	0.0	2.4	7.0	0.0	0.5	0.0	1.0
G	3.1	0.0	0.0	0.7	1.1	0.1	0.1	0.3	2.5	20.8	0.6	0.0	0.0	0.9
H	0.5	0.1	0.0	0.0	2.1	0.9	0.2	0.0	0.6	14.7	0.0	0.8	0.0	1.8
I	3.4	0.7	0.0	0.9	3.3	0.3	0.1	0.5	0.3	8.4	0.2	0.3	0.0	3.4
J	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	23.0	0.0	0.2	0.0	0.0
K	0.0	0.0	0.0	0.0	2.3	0.7	0.0	0.0	0.7	2.0	0.0	0.0	0.0	0.6
L	0.0	0.0	0.0	0.8	0.4	0.6	0.2	0.0	1.1	1.3	0.0	0.0	0.0	0.7
M	2.7	0.0	0.1	1.0	0.3	0.1	0.0	1.2	1.1	0.0	0.0	0.0	0.0	0.0
N	0.8	0.0	0.0	0.2	0.6	0.2	2.4	0.0	6.2	2.3	0.0	3.3	0.0	0.7
O	0.4	0.0	0.1	0.0	0.1	0.3	0.3	0.0	0.0	4.7	0.0	1.2	0.0	0.3
P	0.1	0.0	0.0	0.4	0.5	0.8	1.3	0.8	1.9	7.6	0.9	1.1	0.0	1.0
AVG	0.8	0.1	0.1	0.3	0.9	0.5	0.4	0.3	2.3	10.6	0.1	0.8	0.0	0.8

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PERCENT DISTRIBUTION OF TIME SPENT IN EACH CATEGORY

	CATEGORY												
Class	S81	S82	S83	S91	S92	S93	S94	S95	S96	S97	% Total Teacher	% Total Student	% Total
A	21.1	0.0	0.0	3.1	0.0	0.9	0.0	0.1	3.6	0.0	37.9	60.1	98.0
B	36.8	0.5	0.0	3.2	0.2	6.3	0.9	0.2	4.4	0.1	23.9	75.2	99.1
C	2.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	92.8	6.6	99.4
D	27.2	0.6	0.1	0.1	0.0	1.3	2.2	0.4	10.8	0.0	50.8	48.0	98.8
E	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.4	65.1	99.5
F	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.8	14.9	100.7
G	25.2	3.7	0.0	3.2	0.9	0.0	0.3	0.8	7.0	0.0	24.3	74.2	98.5
H	16.4	0.3	0.4	11.3	0.0	0.1	0.0	2.0	5.2	0.1	33.3	64.2	97.5
I	23.9	5.9	0.1	7.1	2.6	0.5	0.8	0.6	3.9	0.1	28.5	70.2	98.7
J	13.8	0.0	0.0	4.2	0.2	0.0	0.0	0.0	6.4	0.0	51.2	48.4	99.6
K	25.2	0.0	0.1	9.6	2.4	0.7	0.0	0.0	14.8	0.0	38.4	60.3	98.7
L	10.4	0.1	0.0	3.8	0.0	0.0	0.0	0.2	11.8	0.0	66.0	32.5	98.5
M	5.4	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.6	0.0	82.3	16.4	98.7
N	24.9	0.0	0.0	4.1	0.0	1.0	0.0	0.4	13.5	0.0	38.1	61.2	99.3
O	10.1	0.0	0.0	4.1	0.0	0.0	0.4	1.4	4.2	0.0	70.4	28.3	98.7
P	6.1	0.0	0.0	6.2	0.0	0.9	1.1	0.0	3.8	0.0	60.3	36.6	96.9
AVG	15.1	0.7	0.0	3.8	0.4	0.7	0.4	0.4	5.6	0.0	51.2	47.6	98.8

PERCENT DISTRIBUTION OF INTELLECTUAL OPERATIONS IN EACH OF THE 52 CATEGORIES

	CATEGORY													
Class	T10	T20	T30	T40	T50	T51	T52	T53	T54	T55	T56	T61	T62	T71
A	6.7	2.5	8.4	0.8	0.2	7.2	3.3	3.7	0.2	5.3	1.6	2.3	0.0	0.2
B	0.4	2.0	6.2	1.4	0.8	7.9	1.3	2.7	0.0	0.4	4.4	1.2	0.7	0.0
C	8.6	2.0	9.9	1.0	1.4	13.7	13.3	5.5	0.3	1.4	0.3	11.7	0.0	1.1
D	0.8	2.7	11.4	1.1	1.9	12.8	5.9	11.2	0.0	0.6	0.3	2.9	0.6	0.9
E	7.1	3.5	2.1	0.0	0.0	26.5	2.1	21.6	0.0	0.0	0.0	6.5	0.0	0.7
F	21.3	2.2	1.2	0.0	1.2	10.9	6.0	8.9	0.0	2.6	0.0	9.0	0.0	0.4
G	2.2	0.0	10.2	0.0	2.0	9.6	0.4	4.0	0.0	0.4	0.4	2.0	0.7	0.0
H	1.9	2.8	10.0	2.5	0.0	10.0	2.1	7.2	0.4	0.8	1.2	2.7	0.6	0.0
I	0.4	1.8	5.9	0.2	0.9	9.4	1.6	3.9	0.2	0.5	0.0	1.3	0.8	0.0
J	6.6	0.0	6.1	1.5	0.5	21.8	2.8	12.7	0.0	0.0	0.0	4.2	0.9	0.0
K	0.3	1.5	11.2	1.2	0.0	12.6	1.6	5.0	0.0	0.0	0.0	2.4	0.3	0.0
L	0.3	4.7	12.0	1.7	5.2	14.0	6.7	9.6	0.0	0.6	0.3	1.2	0.9	0.0
M	0.0	0.6	5.6	1.3	3.6	11.8	4.5	9.8	0.6	1.8	0.7	7.9	0.3	1.6
N	0.3	4.5	10.0	0.0	0.6	15.7	3.9	7.5	0.0	0.0	0.9	0.3	1.8	0.6
O	6.0	0.8	13.2	1.2	0.4	12.7	4.8	6.7	0.0	0.8	0.0	6.0	0.4	1.2
P	9.0	3.4	10.6	2.4	2.0	6.6	5.6	7.4	0.0	1.6	0.0	0.6	1.4	0.2
AVG	4.5	2.2	8.4	1.0	1.3	12.7	4.1	8.0	0.1	1.1	0.6	3.9	0.6	0.4

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PERCENT DISTRIBUTION OF INTELLECTUAL OPERATIONS IN EACH OF THE 52 CATEGORIES

	CATEGORY													
Class	T72	T73	T81	T82	T83	T91	T92	T93	T94	T95	T96	T97	S10	S20
A	0.0	0.2	1.9	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.7
B	0.0	0.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.8	0.9
C	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.1
D	0.0	0.3	4.0	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.3
E	0.0	0.0	3.5	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
F	0.0	1.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.8
G	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.4	1.6
H	0.0	1.9	1.5	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.5
I	0.0	0.4	3.0	0.0	0.0	0.7	0.2	0.2	0.0	0.0	0.2	0.0	0.2	2.0
J	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
K	0.0	0.6	3.9	0.3	0.0	0.3	0.0	0.3	0.3	0.0	1.6	0.0	0.0	0.3
L	0.0	0.6	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
M	0.0	2.3	3.6	0.0	0.0	1.7	0.3	0.0	0.0	0.0	1.0	0.0	1.7	4.6
N	0.0	0.9	1.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
O	0.0	2.0	5.6	0.0	0.0	1.2	0.4	0.4	0.8	0.4	0.4	0.0	0.4	0.4
P	0.0	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
AVG	0.0	0.9	2.6	0.1	0.0	0.4	0.1	0.1	0.1	0.1	0.3	0.0	0.5	1.2

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PERCENT DISTRIBUTION OF INTELLECTUAL OPERATIONS IN EACH OF THE 52 CATEGORIES

	CATEGORIES													
Class	S30	S40	S50	S51	S52	S53	S54	S55	S56	S61	S62	S71	S72	S73
A	0.7	0.2	0.4	0.2	1.3	3.0	0.5	3.4	15.1	10.4	0.2	0.2	0.0	1.1
B	2.3	0.0	0.2	0.9	2.9	4.4	1.0	2.5	18.1	2.1	0.0	0.0	0.0	1.6
C	0.0	0.0	0.3	0.5	1.7	2.8	1.3	0.6	1.4	7.9	0.0	0.5	0.0	0.0
D	0.0	0.0	0.0	2.2	1.4	2.4	0.6	0.8	0.9	0.8	0.0	0.0	0.0	1.1
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	0.0	2.9	0.0	0.0
F	0.0	0.0	2.5	0.8	0.4	2.7	1.1	0.0	4.7	18.9	0.0	0.4	0.0	1.1
G	1.9	0.0	0.4	5.7	2.3	2.8	1.1	0.4	1.9	10.7	0.4	0.0	0.0	0.4
H	0.9	0.4	0.0	0.2	1.3	4.0	0.6	0.6	1.0	3.2	0.0	0.7	0.0	1.5
I	4.4	1.6	0.0	4.8	3.6	2.5	0.4	1.7	0.9	2.2	0.2	0.5	0.0	2.0
J	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	9.3	0.0	1.0	0.0	0.0
K	0.0	0.0	0.0	0.0	4.1	2.8	0.3	0.0	0.9	1.2	0.0	0.3	0.0	0.6
L	0.0	0.0	0.0	3.4	0.6	3.7	1.4	0.0	1.2	1.5	0.0	0.0	0.0	0.1
M	2.9	0.0	1.0	4.9	1.3	1.6	0.3	6.9	1.9	0.3	0.0	0.0	0.0	0.3
N	1.8	0.0	0.0	0.6	1.8	0.9	2.1	0.3	7.0	2.4	0.0	3.0	0.0	1.2
O	0.4	0.0	0.4	0.4	1.2	3.6	1.6	0.0	0.8	4.3	0.0	0.4	0.0	0.4
P	0.2	0.0	0.0	1.8	3.2	4.2	1.4	2.0	2.4	11.2	0.2	2.0	0.0	1.2
AVG	1.0	0.1	0.3	1.7	1.7	2.6	0.9	1.2	3.6	6.5	0.1	0.7	0.0	0.8

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PERCENT DISTRIBUTION OF INTELLECTUAL OPERATIONS IN EACH OF THE 52 CATEGORIES

	CATEGORY												
Class	S81	S82	S83	S91	S92	S93	S94	S95	S96	S97	% Teacher Total	% Student Total	Number of Total Codes
A	14.2	0.0	0.0	1.0	0.0	0.2	0.0	0.2	2.3	0.2	44.9	55.9	577
B	27.1	0.4	0.0	1.9	0.2	1.9	0.2	0.2	2.3	0.4	31.8	72.3	610
C	7.4	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.6	0.0	73.5	26.7	366
D	23.8	0.6	0.3	0.6	0.0	0.8	0.8	0.3	6.1	0.0	58.3	43.8	379
E	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	23.7	139
F	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.3	36.1	284
G	21.7	5.5	0.0	2.6	0.7	0.0	0.4	0.7	5.8	0.0	33.9	67.4	272
H	18.3	1.2	0.2	5.8	0.0	0.2	0.0	1.2	3.7	0.4	46.0	48.5	413
I	21.3	4.6	0.2	4.8	1.1	0.2	0.2	0.4	4.3	0.4	31.6	64.5	426
J	15.9	0.0	0.0	3.7	1.4	0.0	0.0	0.0	4.7	0.0	59.5	38.0	215
K	24.6	0.3	0.3	7.7	0.9	0.0	0.0	0.0	10.2	0.0	43.4	55.5	311
L	18.5	0.3	0.0	2.0	0.0	0.0	0.0	0.3	6.8	0.0	59.9	41.7	358
M	9.2	0.0	0.3	1.3	0.0	0.0	0.0	0.0	1.0	0.0	59.0	39.5	302
N	17.4	0.0	0.0	3.4	0.0	0.3	0.0	0.3	6.7	0.0	48.5	49.8	326
O	13.8	0.0	0.0	4.0	0.0	0.0	0.4	0.8	2.0	0.0	65.4	35.3	254
P	9.4	0.2	0.0	2.2	0.0	0.2	0.4	0.0	1.8	0.2	54.0	45.8	500
AVG	15.3	0.8	0.1	2.6	0.3	0.2	0.2	0.3	3.6	0.1	53.6	47.5	

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