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THE CONTEXT OF EARLY ADOLESCENT LEARNING IN SCHOOL AND COMMUNITY: A RURAL SCHOOL ETHNOGRAPHY

Michigan State University PH.D. 1986

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THE CONTEXT OF EARLY ADOLESCENT LEARNING IN SCHOOL AND COMMUNITY: A RURAL SCHOOL ETHNOGRAPHY

By

Margaret Louise Ritenburgh

DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

College of Education

1986

ABSTRACT

THE CONTEXT OF EARLY ADOLESCENT LEARNING
IN SCHOOL AND COMMUNITY:
A RURAL SCHOOL ETHNOGRAPHY

By

Margaret Louise Ritenburgh

In order to portray early adolescent schooling in rural America, a single seventh-grade science class in a small school in the Upper Peninsula of Michigan was observed for 35 hours over a period of six months by the researcher utilizing participant-observer methods of fieldwork research. Four of these sessions were tape recorded. A student survey focusing on study methods was administered. In addition, the researcher conducted several formal and informal teacher and student interviews. Comparisons were facilitated through observations of the subject seventh graders in their other classes and of the only other seventh-grade science section in the school.

Participant-observation was extended into the school and community, as were the interviewing activities. Much classroom, school, and community data were gathered to aid in understanding and portraying the setting.

The report focuses on the educational activities of the teacher and her students in the classroom. Three of

those students were mainstreamed special education students. One unit of instruction is described in detail.

A unique aspect of the study is that the researcher is an itinerant special education teacher consultant serving, among others, the school where the research was conducted. This differs from the usual "outsider" status of fieldwork researchers. The research process is examined with regard to the feasibility of the utilization of fieldwork research methods by a professional in his/her own work place.

To Jerry and Ann, David, Donald, and Amy

ACKNOWLEDGMENTS

The feeling of accomplishment that one experiences upon completion of a study such as the one reported herein is accompanied by feelings of gratitude to many individuals without whose contributions this successful conclusion would not have come about. I have been most fortunate in the support I have received.

The members of my doctoral committee were always willing to accommodate the rather unique problems I encountered by living in the Upper Peninsula (U.P.) of Michigan while pursuing a graduate degree from Michigan State University, about eight hours away by car. Dr. Charles A. Blackman, committee chairman, believes that the mission of a state university is to serve all the people of that state. Acting on that belief, he has been instrumental in structuring a doctoral program for U.P. students which combines course offerings in the U.P. with study on campus. As a part of that program, Dr. James L. Buschman taught a comprehensive course on fieldwork research which provided me with a new way of looking at my world and its people and institutions. His guidance and encouragement in my research have been invaluable. Dr. Samuel A. Moore has sharpened my research skills with his probing questions and scholarly

discourse. Dr. Ben A. Bohnhorst has, with his timely direction, likewise contributed to the insight I was able to develop with regard to this study.

My fellow students/researchers -- especially June Schaefer, Jeff Miller, and Bill Korpela -- have unselfishly shared their information, experience, and time to encourage and help me in my endeavors. We have learned, and thereby grown, together; it has been an exciting experience.

"Mrs. Randall" and her seventh-grade science class contributed to a rich research site. I cannot adequately express the gratitude I feel toward Mrs. Randall for her unqualified sharing. Her professionalism promoted my easy entry into the research site, as neither her administrators nor her co-workers questioned her judgment in allowing me to study her classroom. Likewise, I feel her hospitable example precipitated the students' acceptance of my presence.

Both the superintendent and the director of special education of the intermediate school district in which I am employed maintained an interest in my project, encouraged my efforts, and facilitated my research by allowing me to alter my work week to accommodate data-gathering in my site.

I am grateful to my sorority sisters in Delta Kappa Gamma who honored and shared in my work by awarding me state and local scholarships to help finance my dissertation credits.

Most of all, I am indebted to my husband, Jerry, who believed in my abilities long before I did and who has provided many forms of support for my educational pursuits for all of our 24 years of marriage. Without him, none of this would have been possible.

Our two older children, Ann and David, have cheerfully worked long hours while carrying full academic loads at their respective colleges, significantly easing the financial burden of having three family members in college at the same time. Donald has been very patient in sharing his computer knowledge with me, thereby enabling me to more efficiently and effectively manage the research data. Amy has taken on many household tasks to allow me time to carry on my study. I love, appreciate, and thank my family.

PREFACE

The hardy pioneers who founded Pine Forest in hopes of building better lives for themselves and the generations to come would consider the Pine Forest Schools a dream come true. They would approve of the modern buildings; the sleek, yellow buses; and the nutritious hot lunch program. They would be amazed at the instructional materials, from the array of colorful books to the technology of the audiovisual equipment. They would be in awe of the level of training of the teachers. They would think it wonderful that almost all young people complete high school. They would be happy that so many of their descendants have the opportunity to attend trade schools, colleges, and universities. In short, they would be proud of the progress made since the one-room schools of their day.

On the other hand, they would be happy that some things about the community have not changed appreciably over the years. The countryside still retains its natural beauty. The people still revere God and Country. Honesty and industriousness are still respected. Pine Forest remains a nice place to live and to raise a family. In other words, the times have changed but the basic values

remain the same.

The school reflects these values. The facilities and equipment are modern, yet conservative; they are carefully maintained by conscientious stewards of their district's resources. Staff members and students have a sense of purpose. Parents and others in the community are involved and supporting. Indeed, there is a strong sense of school and community. This is as it should be in Pine Forest.

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The Study

The study was designed to accommodate an in-depth look at a rural junior high/middle school class in order to investigate and document the teaching and learning that went on there. The broad, overarching question of the study was: How are the activities of schooling carried out in this particular classroom within this particular school and community? In other words, the focus was on teaching and learning within the milieu of the classroom. Inherent in the study, however, was an acknowledgment of the influence of the larger arena, school and community, on that classroom.

Those interested in the education of the early adolescent can find much information relative to the characteristics of the ten- to fourteen-year-old, middle schools/junior high schools, teaching styles and learning styles, student attitudes and achievement, etc. However, there is little descriptive data integrating these various facets in a particular classroom (Brophy, 1979a).

Brophy reported that the preponderance of classroom research has been done with elementary children in basic skills instruction in schools serving primarily low

socioeconomic populations.

Ward, Mergendoller, and Mitman (1982) commented on the paucity of descriptive literature on early adolescent schooling:

> As is true for the literature on junior high/middle schools in its entirety, there is very little empirical data from which to draw conclusions about what teaching is like in junior high/middle schools. An accumulation of basic descriptions about the teaching in a variety of junior high/middle schools does not even exist. (1982, p. 32)

A search of the literature reveals little information regarding learning at the middle level of education in rural settings. The experiences, hopes, and aspirations of early adolescents in rural America may be quite different from those of their counterparts in the cities and suburbs. Likewise, a small community's expectations for its schools and schooling may influence and/or reflect those differences.

Other disciplines have long recognized the importance of case studies. In education there is a more recent but growing respect for qualitative data as a means of characterizing a phenomenon to enhance much of what has been learned in the more prevalent quantitative research as well as to identify areas for further research:

> An ethnographic study is important for more than what it tells about one school or about the daily trials of adolescence. Observational studies are most valuable when they contribute testable hypotheses for new studies or when they embellish the stark coefficients of empirical research. (Epstein, 1981, p. 9)

The need to characterize middle-level (junior high school or middle school) education is currently accentuated by the movement to require specific certification for teachers at this level. In response, many colleges and universities are in the process of designing programs of study for teachers of early adolescents. Documentation of middle-level schooling will most certainly contribute to the appropriateness of the curricula they develop.

The researcher feels that the descriptive data provided by the study will be useful to student teachers and practicing teachers for comparison with their settings and/or as models for consideration in modifying/enhancing those settings. She sees this as a unique and significant contribution of descriptive research.

All of this suggests that a study of early adolescents in a small school setting can make a singular and important contribution to a comprehensive understanding of America's schools.

Methodology

Fieldwork methodology was identified as the appropriate means to accomplish the "thick description" (Geertz, 1973) necessary to document classroom teaching and learning. The study, therefore, utilized methods originally developed by anthropologists as they sought to understand different, often primitive, cultures. Clark (1979) characterized the application of these anthropological methods to the study of schooling:

> The methods of participant observation, field work, use of informants, and derivation of hypotheses from analysis of field notes have been refined and modified to fit the context of American schools. The ethnographer is committed to studying a whole social system by portraying it in terms credible to and understandable by participants in that system. Indeed, major questions in most ethnographic studies have to do with locating the boundaries of the "whole" and identifying the web of meaning shared by teachers and students. (p. 31)

Wilcox (1982) described the refining that must go on as one proceeds with this type of research:

> The problem is of necessity general in scope. Because one is attempting to understand a system in its own terms, according to its own criteria of meaningfulness, one cannot predict in advance which aspects of the system will have significance or the kind of significance they will have. Because one assumes as an ethnographer that particular parts of the system can be understood only in the context of the working of the whole, one cannot predict in advance precisely where one should focus. It is crucial to begin the research without specifically predetermined categories of observation, questionnaires, precise hypotheses, and so on. (p. 459)

Schatzman and Strauss (1973) describe the thinking that is involved in the analysis of ethnographic data as being "self-conscious, systematic, organized, and instrumental" (p. 109). The data that are gathered are cross-checked against each other by a procedure known as "triangulation" (Gorden, 1980, p. 12) to determine their validity. Disconfirming evidence as well as confirming evidence is weighed in the process. A classification system for persons, things, and events is developed as a means to discovering "key linkages" between salient phenomena. Patterns emerge in these key linkages leading to the development of constructs.

It should be noted, however, that this is not a step-by-step procedure. It is by no means static. Classes change and key linkages become realigned, suggesting new theories which require further checking of the literature and/or a new way of exploring the research site.

Data analysis is summarized by Bogdan and Biklen (1982):

> Analysis involves working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others. (p. 14)

Research Questions

Fieldwork methods are useful in considering five related questions:

(1) What's happening in this field setting?

(2) What do the happenings mean to the people involved in them?

(3) What do people have to know in order to be able to do what they do in the setting?

(4) How does what is happening here relate to what is happening in the wider social context of this setting? [and]

(5) How does the organization of what is happening here differ from that found in other places and times? (Erickson, Florio, & Buschman, 1980, p. 2)

The study focused mainly on the first three questions. The last two were important only insofar as they provided meaning to and context for the findings.

The foregoing generalized fieldwork research questions provided a framework for defining areas of inquiry

specific to the study. That is, they were useful as major categories of investigation. Each of the five major questions encompassed many study-specific questions.

In this particular study, the question, "What's happening in this field setting?" became (1) What is the teacher doing? (2) What are the students doing? (3) What is being taught/learned? (4) How is the homework which is assigned in this class carried out? (5) How do these students learn in nonacademic situations? and (6) How do these students spend their out-of-school time?

The question, "What do the happenings mean to the people involved in them?" translated into (1) What are the teacher's goals? Does she feel they are being met? (2) What are the students' goals? Do they feel they are being met? (3) How do the participants in this class view one another? (4) How do others in the school setting view this class and its participants? and (5) How do the different segments of the community view the school in general and this class in particular?

"What do people have to know in order to be able to do what they do in the setting?" meant variously (1) What teacher preparation (methodology and subject matter) is necessary? (2) What are the prerequisites (basic skills, study skills, and social skills) for the students? and (3) What do the students and the teacher need to know about the school and the community in order to function successfully within them?

As the study progressed, the general question "How does what is happening here relate to what is happening in the wider social context of this setting?" became (1) How do parental beliefs/expectations influence the students? (2) How and to what extent are the students influenced by the total school milieu? and (3) What is the relationship between the school and its community?

In this study, the question "How does the organization of what is happening here differ from that found in other places and times?" meant (1) How does this class differ from those of the past, especially in this community? (2) How do these students perform in their other classes? (3) How does this class compare to other seventh-grade science classes in other places? and (4) Should/Will what is happening in this class be changed for future classes?

Although each of these questions helped to direct the research, it was recognized that many of them could not be answered sufficiently within the scope of this study.

Logistics

The group chosen to study was the seventh-grade science students taught by Mrs. Sally Randall* at the Pine Forest School located in a rural area of the Upper Peninsula of Michigan.

*The names of all persons and places have been changed to protect the privacy of individuals involved.

Participant-observation, of an exploratory nature for purposes of conceptualizing the research project, began in September of 1984 with four hour-long observations of what proved to be the "other" section of seventh-grade science. Mrs. Randall taught both sections, and it was to have been the researcher's choice as to which class she wished to study. After four observations, Mrs. Randall's work assignment was changed to allow her to set up and teach an elementary computer class during that first hour. Another teacher was given the first-hour seventh-grade science class. As a result, the second-hour class was targeted for study. Even though this was an unanticipated development, the researcher had determined that either class would provide an appropriate research site. The fact that she had already done some preliminary observations in the first-hour class was fortunate as it provided some comparative data.

Participant-observation of the second-hour group began in December. The plan was to observe the Tuesday and Friday class sessions each week. Some exceptions were made due to school cancellations and the absence of either the teacher or the researcher, but the schedule generally remained intact. (See Appendix A for a calendar of research activities.) Thirty-five observations of this group in their science class were made between December 4, 1984, and June 4, 1985.

During each observation the researcher sat at a student desk positioned toward the front at a side of the

room. From this vantage point she could turn somewhat sideways to observe facial expressions, etc. with relative unobtrusiveness. As she observed she took notes (in shorthand). Fieldnotes (see sample in Appendix B) were prepared after each observation, integrating on-site notes with the results of the "disciplined reflection" (Florio & Walsh, 1978, p. 12) engaged in after each session. These were usually completed on the same day the visitation took place. A home computer with a word-processing program was used for purposes of typing and editing (and later, analyzing) the fieldnotes.

Audio recordings were made of four sessions, with the promise to Mrs. Randall and her students that the researcher was the only one who would listen to and transcribe them. Fieldnotes were used to aid in preparing the transcripts. (See sample in Appendix C.)

It is felt that the researcher was viewed by the students as an interested, but not authoritative, adult who spent a lot of time with the class and who was accepted in, but not influential in nor necessary to, the setting. Mrs. Randall probably set the tone for this relationship with her example of relaxed acceptance and friendly, helpful sharing. Within a very short time after participant-observation had begun, the teacher expressed her feeling that the researcher's presence had little, if any, impact on the class. Further evidence of this appeared in the researcher's fieldnotes early in February:

> Shawn threw a paperwad at Janice. She showed no reaction. They were sitting about three feet from me. FOR SOME TIME NOW I HAVE FELT THAT AT LEAST MOST OF THE STUDENTS ACT NO DIFFERENTLY WHEN I AM HERE. (FN 2-5-85)

The group mostly remained intact throughout the school day. One day in April the researcher spent the entire school day with the students in order to gain a better understanding of what it was like to be in the seventh grade at Pine Forest. Fieldnotes were prepared to document those observations.

As might be expected, Mrs. Randall was the most important source of information for this study. By arriving at the school before science class began, the researcher could, if necessary, consult with her for a few minutes. When science class was over, there was usually a period of a few minutes in which to share perceptions of that day's session. Occasionally there were evening or weekend telephone calls. Mrs. Randall was interested in the research and was very helpful in providing documentation/information to explain/qualify what had been observed. She was candid and insightful about students, co-workers, families, etc., as well as inventive in providing procedural suggestions with regard to the study.

On three occasions more formal interviews with Mrs. Randall were conducted. The third interview was conducted (in September of 1985) after all of the observational data had been gathered and the analysis was well underway. Prior to each of the interview sessions, the researcher listed the questions to be explored. Some of the

questions sought clarification of information related to classroom observations; others had to do with the teacher's philosophy, goals, etc. A list of questions was given to Mrs. Randall at the time of the interview. Audio recordings of the interviews were made. Summaries of them were typed, using the questions as guides and making reference to the tape recorder counter number to aid in retrieval. (See sample in Appendix D.)

Four students were interviewed near the end of the school year. Their participation was voluntary, and written approval was obtained from their parents. The four were selected for the purpose of illustrating the diversity among the students. They were all asked similar questions. (See Appendix E for list of questions.) These interviews were also recorded and were summarized and referenced like the interviews with Mrs. Randall which were described previously. On the same occasion that each of the four students was interviewed, he/she was administered the science subtest of the Woodcock-Johnson Psycho-Educational Battery (WJ-PEB): Tests of Achievement.

The only other formal, audio-recorded (and summarized and referenced) interview was one with Grace, a lady in her early seventies who works in the office at the school three days a week and who has always lived in Pine Forest. She is an avid believer -- as was her late husband -- in the merits of a "good" education. She was a key informant for many facets of the investigation. Besides the long, structured interview, there were many shorter

conversations which greatly enhanced the researcher's insight into the setting and its people.

The researcher obtained several tape recordings of interviews (some conducted by Grace) with Pine Forest "pioneers" (in 1975) from the Community College library in Claxton. These were useful in helping the researcher develop an understanding of Pine Forest's past which, of course, contributed to an understanding of the Pine Forest of today.

A voluntary pupil survey was administered in April. It provided information relative to study habits and attitudes toward science. (See copy in Appendix F.) Twenty-five of the 26 students present completed the survey.

Participant-observation in the larger social context, school and community, was accomplished as situations presented themselves. Besides the classroom observations of the other section of seventh-grade science were the activities which were a natural part of the researcher's other role, that of teacher consultant. She also attended a few high school basketball games and track meets. The researcher frequently ate lunch in one of the four restaurants in the district. She did business at the bank, the post office, three of the stores, and two of the gas stations. She attended the Memorial Day Parade and took part in activities in connection with a four-day July 4th weekend "Homecoming" celebration. She even attended an auction sale at Grace's farm.

Schedules, handbooks, yearbooks, lesson plans and materials, Mrs. Randall's gradebook, anecdotal student information, school newsletters, daily announcements, newspaper clippings and other sources of school and community information, etc. were collected to help the researcher order, understand, and document what she observed, as well as what she was unable to observe firsthand. The fact that the researcher did most of her observing on Tuesdays and Fridays made it critical that she use these other means to learn about what went on in her absence.

The review of the relevant literature was ongoing throughout the research activities, from the proposal phase through the data-gathering, analysis, and reporting phases.

Analysis of the data went on from the time it began to be collected to the time the reporting was finalized. The final stage of data analysis was that of determining what was important to educators and should, therefore, be reported.

Researcher-Site Relationship

The researcher is a special education teacher consultant employed by the intermediate school district which includes the Pine Forest School District. For the past six school years she has visited one or both of the school buildings in the district on at least a weekly basis, spending an average of about four or five hours a week there. Because of her heavy involvement in the special

education referral process which is usually initiated in the lower grades (see Appendix G for a complete job description), the bulk of that time had been spent in the elementary building. For that reason, at the onset of the study she knew and was known by the elementary staff much better than by the intermediate, junior high, and high school staffs.

Mrs. Randall, the teacher of the class studied, was better known to the researcher than the other junior high and high school teachers because Mrs. Randall's former part-time counseling assignment had provided opportunities for the two to confer about students with learning problems. On occasion these discussions digressed from concerns focusing on a single student to more generalized concerns with regard to the development of student study skills. The relationship had remained on a professional basis and could have been characterized as a mutual interest in and concern for students as well as a genuine respect and regard for each other's skill and expertise.

There were advantages and disadvantages resulting from the researcher's familarity with and in the research site. Many potential sites were known to the researcher because she served several rural schools. Because of this the researcher was able to make an informed site choice. Entry was probably more easily gained because the researcher was known by those from whom approval was sought and obtained.

The fact that the researcher was a respected, albeit peripheral, professional in the setting prior to the study was positive with regard to what could be learned in the available time. When participant-observation began, much ethnographic information had already been assimilated, a key informant (the teacher) had been identified, and rapport had been established with her and with other potential subjects/informants.

On the other hand, because the researcher is an educator and was familiar with the research setting from the beginning, a conscious effort had to be made to "make the familiar strange" (Erickson, 1973) in order to avoid finding in the setting predominantly/only what she felt was there. Peshkin (1982) spoke of the four R's of research: "(1) researcher (who in terms of personal qualities and background is doing the study); (2) research (what is studied); (3) researching (how the study is conducted); [and] (4) results (what is found in the data)" (p. 50). He contended that it is essential for an ethnographer to understand the association among these elements in order to minimize the risk of finding in the data what is in the "beholding eye" (p. 51) rather than what is actually there. It was imperative that the researcher keep that association in mind throughout the study.

The researcher's background also must be considered with respect to her ability to assume the dual perspectives necessary for effective ethnographic inquiry. These perspectives were designated as "emic" (that of the

participant in the setting) and "etic" (that of the objective outsider) by linguist Kenneth Pike (1954).

The emic perspective was achieved quite easily as the researcher had been a participant in the school for some time, even though she had never before observed the class studied. Adding to her ability to assume the emic viewpoint was her involvement in similar settings for many years; she attended kindergarten through the twelfth grade in rural schools as did/do her four children (they attended/attend a school similar in size to, and about 35 miles from, Pine Forest), had taught seventh graders in a small school setting, and had served as a special education teacher consultant in small schools for several years. Her husband has been an administrator in small schools for over 25 years.

These advantages to the emic stance were potential disadvantages with regard to the researcher's ability to assume an etic perspective. Recognition of the influence personal background can have on one's objectivity, as well as a dedicated emphasis on viewing from an emotional distance, have been necessary in order to achieve an etic perspective. (See Appendix H for the researcher's educational autobiography.)

Organization of the Report

In this report of the study introduced in this chapter, the chapter which follows lays the groundwork for consideration of the research questions by reviewing related

research. The review is organized according to (1) the characteristics of early adolescents, (2) junior high schools and middle schools, (3) effective teaching, (4) student learning styles, and (5) student attitudes and achievement.

Chapter Three describes the setting: the Pine Forest School District, the Pine Forest School, and the seventh-grade science classroom.

The subjects central to the study, Mrs. Randall and her seventh-grade science students, are profiled in Chapter Four.

In the fifth chapter, meaningful teaching and learning activities are portrayed and analyzed as they were observed and recorded in the classroom.

The final chapter contains a summary of and conclusions from the study and offers recommendations based on the research findings. Included as a part of those recommendations is a discussion of the potential for conducting descriptive research within one's own workplace. Suggestions are made with regard to possible areas for such research.

CHAPTER TWO: LITERATURE REVIEW

Introduction

This review of relevant literature is structured according to the categories of variables as outlined by Brophy (1979a) based on Dunkin and Biddle (1974):

> (1) presage (background characteristics, attitudes, beliefs, expectations, and abilities that teachers and students bring into the situation under study);
>
> (2) context (grade level, subject matter, immediate instructional objectives, and other particulars of the situation and setting);
>
> (3) process (observable teacher and student behavior, including teacher-student interaction); [and]
>
> (4) product (variables indexing the outcomes of instruction, typically student attitudes and achievement). (p. 17)

Figure 1 illustrates how this review fits into that structure.

The remainder of this chapter contains summaries of the relevant research in the areas delineated above.

Characteristics of Early Adolescents

> Describing "the" seventh grader is an impossible task for seventh graders come in many sizes and shapes, with a variety of ethnic and religious backgrounds, interests, likes and dislikes, and hopes for the future. Their stages of maturation are so varied; some are childlike without any

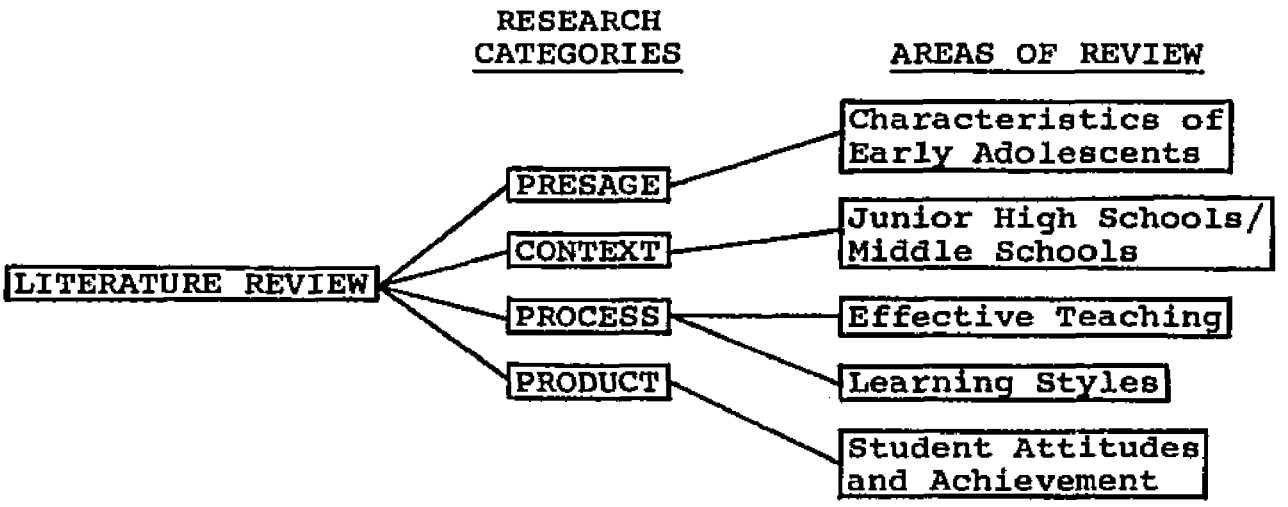


FIGURE 1. LITERATURE REVIEW

> outward indication of the rapid physical change which will soon transform them into true adolescents. Others already possess mature physiques and are capable of producing children. Some are weathering the maturation process with ease, while others writhe and struggle like butterflies emerging from tattered cocoons....The seventh grade, therefore, is composed of students who represent a true paradox. These youngsters are alike mainly in their unlikeness, with differences not only from one another but within themselves, often from one day to the next. (Lounsbury, Marani, & Compton, 1980, p. 4)

Schine and Harrington (1982) synthesized the findings of researchers and educators (Erikson, 1968; Kagan, 1971; Mitchell, 1979; Pulaski, 1971) with regard to the developmental characteristics of early adolescents as follows:

(1) Physical development -- variablilty, uneven growth, awkwardness, and restlessness

(2) Intellectual development -- variability, at different stages of thinking, from concrete operational to formal operational (to use Piaget's terms)

(3) Social development -- greatly influenced by the peer group

(4) Moral and ethical development -- beginning to formulate codes and standards of judgment

(5) Emotional development -- increase in self-doubt and introspection (p. 9)

Schine and Harrington (1982) translated the characteristics of early adolescents into recommendations to the educators of these young people. They were guided in this task by the works of James (1974), Kagan (1971), Konopka (1973), and Lipsitz (1977). They suggest that early adolescents need:

(1) to discover and test new skills;

(2) to develop a sense of competence, an antidote to the self-doubt of this period;

(3) to socialize, to develop close friendships;

(4) to have an environment that is very much their own, where they can retreat from the demands and conflicts of the larger setting;

(5) to have freedom to take part in the world of adults and to move away from the isolation of childish roles;

(6) to know a wide variety of adults who represent different backgrounds and occupations;

(7) to know that they can speak and be heard, that they can make a difference;

(8) to test a developing morality and value structure in authentic situations;

(9) to share in making decisions within appropriate parameters;

(10) to have short-term projects with tangible or visible outcomes; [and]

(11) to have support and sensitive guidance from adults who appreciate their problems and promise. (p. 12)

Educators have long recognized that the structure of the school setting is a variable that should be arranged so that it best meets the needs of young people. The next area reviewed considers the context of middle-level education.

Junior High Schools/Middle Schools

Soon after the beginning of the twentieth century as more and more students were going on to high school, it became apparent that there was a need to provide for an easier transition from elementary school to high school. The junior high school came into being in response to this need (Good, 1962).

The classic statement of junior high school functions was that of Gruhn and Douglass (1947) in which they named the following six general services which they felt should be provided in the context of middle-level education: integration, exploration, articulation, socialization, guidance, and differentiation.

The shift to the middle school concept in the late fifties and the decade of the sixties was not so much in response to a change in these purposes as to a charge that the traditional junior high school had lost sight of these purposes (McGlasson, 1973). Indeed, Alexander and Kealy (1973) stated: "If the program of the junior high school had achieved its goals as originally stated, there would be little need for change except perhaps for a reorganization by years to accommodate earlier maturing children" (p. 16).

Popper (1967) likewise recognized that "what is at issue now in professional dialogue is not whether there shall be a junior high school or a middle school, a semantic distinction without a difference, but rather which grades are functionally appropriate for this unit of public school organization" (p. xi).

McGlasson (1973) saw the middle school movement in a positive light because of the "re-look at the middle level of education" (p. 20) which it afforded. He said that a change in organizational pattern was not as important as the study and concern which it promoted because of which "boys and girls will be the winners" (p. 20).

This discussion of the issues involved in the structuring of middle-level education leads quite naturally to a look at the activities of the key participants within that structure -- the teachers and the students. The next two literature areas review the process category of research, namely teaching and learning.

Effective Teaching

Hunter (1979) defined teaching as "the process of making and implementing decisions, before, during, and after instruction, to increase the probability of learning" (p. 62). This requires that the teacher learn, internalize, and implement what is known about teaching and, further, that he/she synthesize this with the needs of the individual student in his/her particular life space.

This can be an especially challenging task for middle-level educators because of the unpredictablity with regard to the maturity of any given preadolescent at any given time. Mann and Murphy (1981) spoke of the need for middle-level educators to be knowledgeable of the variability of developmental characteristics of children in this age group in order to be flexible in responding to their students' behavior and idiosyncracies.

Caution must be exercised not to generalize characteristics of effective teaching across age levels (Brophy, 1979a, 1979b; Mann & Murphy, 1981; Ward, Mergendoller, & Mitman, 1982). Effective teaching practice in the elementary grades may or may not be desirable middle-level educational methodology.

Three of the above-cited references (Brophy, 1979b; Mann and Murphy, 1981; Ward et al, 1982) contain reviews of effective teaching research. Following are syntheses of those reviews focusing on those aspects that apply specifically to middle-level education.

Brophy (1979b) looked at four studies to support his contention that, where basic skill mastery is the goal, findings concerning direct instruction at the elementary level do generalize to higher levels and different kinds of students.

First, he reviewed a study by Stallings, Needels, and Stayrook (1979) involving reading instruction at the junior and senior high school levels. He reported their findings to be similar to those for basic skills instruction

in the early grades: growth of reading skills associated with maximizing time on task, predominantly total group instruction, directed questioning, regular teacher feedback, control of negative behavior, encouragement of positive behavior, and use of guides and probing questions when students did not know the answer.

Second, he reported the findings of a study by McConnell (1977) in which student learning correlated positively with task orientation, clarity of presentation, frequent probing to improve student response, enthusiasm, and frequent teacher talk.

Next, he reported on a study in seventh- and eighth-grade math classrooms in which he was one of the researchers (Evertson, Anderson, & Brophy, 1978). They found the following correlates of learning math: considerable class discussion, lecture, and drill; task-oriented, businesslike instruction; active teacher involvement in instructing and interacting with students; teacher praise of good contributions; good classroom management; and use of process as well as product questions.

The same researchers found strikingly different results for seventh- and eighth-grade English classes, however. In those classes they found little support for the direct instruction model nor did they find many significant relationships between classroom process variables and student learning. Brophy (1979b) gave as the major explanation that basic skill mastery is not a primary goal of seventh- and eighth-grade English classes.

Ward et al (1982) reviewed three additional studies conducted in middle-level schools (Emmer & Evertson, 1980; Worsham & Evertson, 1980; Rounds, Ward, Mergendoller, & Tikunoff, 1982) and summarized their findings. He concluded that successful classrooms are generally characterized by undifferentiated assignments and periods filled by teacher recitation, discussion, and seatwork, and that, within that basic framework, more effective teachers prepare students for instruction with a workable set of rules and procedures, communicate clearly, foster student accountability, monitor students' work, and provide help and feedback on a regular basis.

Mann and Murphy (1981) discussed the teaching of science and mathematics in the context of the process approach as opposed to the product approach. They explained that "while processes represent a cognitively active problem-solving environment, products are often presented to be learned in a passive reception mode" (p. 34). They suggested that this need not be the case, as scientific knowledge is developed through the use of process skills. They cited a study conducted by Tobin and Capie (1980), however, which questioned the effectiveness of process instruction. It revealed that the majority of the 400 sixth through eighth graders in the study were unable to use integrated science processes. The authors (Mann & Murphy) posed: "The implications can be construed to mean that integrated science processes should not be taught in middle schools or that integrated science processes should

constitute a fundamental component of middle school curriculum, as teaching the integrated science processes will promote the development of formal reasoning ability" (p. 35).

Crucial to effective teaching is an understanding of the individual learner. Attention now shifts to student learning styles.

Learning Styles

The search for individual differences which correlate with and, therefore, can be useful for predicting and furthering school achievement has interested educators for some time. Nations (cited in Eiszler, 1982), building upon past research, conceptualized learning style as an integration of three components: sensory orientation (modality preference), responsive mode (preferences for group or individual work, active participation or keen observation, individual autonomy or teacher directives, etc.), and thinking pattern (preferences for inductive, intuitive approaches or for deductive, linear thinking).

Eiszler explained that Dunn and Dunn (1975) attempted to identify learner style by grouping several factors into four categories of stimulation. They proposed that the way a person learns is dependent on his/her reaction to the immediate environment (sound, light, temperature, and casual or formal design), emotional make-up (achievement motivation, persistence, willingness to assume responsibility, ability to work independently), sociological

reaction to people (group interaction size and type preferences), and physical being (modality preferences, level of need for intake, time-of-day preferences, and need for mobility and activity). They developed a self-report instrument, the Learning Styles Questionnaire, to give information relative to learner style for use by teachers in creating appropriate learning environments for their students.

Eiszler (1982) utilized the Perceptual Preferences section of the Learning Styles Questionnaire to determine if modality preferences are a significant component of student learning styles. He found modality preferences in adolescent learners to be complex and interwoven with other preference aspects. He cautioned: "Instruments and assessment approaches that lead teachers and researchers to consider modality preference in general terms may do more to contribute to the misunderstandings of individual learner differences than to further a commitment to developing and using information on individual differences in teaching" (p. 13).

Witkin (1950) theorized that people are either field dependent (tending to take into account the total dimensions of a problem) or field independent (focusing on specific elements of a problem). Desjarlais (1975), building on this conceptualization, found indications that although cognitive style is not a function of intelligence or maturity, certain kinds of content are handled best through particular cognitive modes. He stated that

scientific and mathematical concepts are most effectively understood by an analytic (field independent) learner while the humanities and artistic and literary materials are more efficiently treated by a global (field dependent) learner.

Eiszler (1982) brought up the argument that learner styles do not necessarily have to be adapted to but, rather, can be considered to be malleable, capable of being changed to fit a particular educational context.

The final consideration in this literature review is with the products of middle-level education, namely the attitudes and achievement of its students.

Student Attitudes and Achievement

Evertson (1979) reported that much of what had been written about student attitudes and achievement suggested a cognitive-affective trade-off (i.e., the belief that affective growth can be accomplished only at the expense of cognitive development, and vice versa). She was involved in a study which investigated this premise. It used anecdotal information gathered by classroom observers to capture salient characteristics and the overall tone of teacher behavior and classroom environment. A wide variety of instruments was used to measure processes (classroom occurrences and behavior) and outcomes (the achievement and attitudes of students). High achievement-high attitude classes were characterized by good organization, a high proportion of time in instructional activity, and task-orientation. Low achievement-low attitude classes were

chaotic and unstructured and had less task-orientation.

Fisher and Fraser (1983) investigated the relationship between affective and cognitive learning outcomes of students and student perception of classroom environment, as measured by the Classroom Environment Scale, for a sample of 1083 students in 116 eighth- and ninth-grade science classrooms. Their findings were similar to those of Evertson (reported above) in that greater levels of classroom order and organization were linked with greater student achievement of a wide variety of goals, both cognitive and affective in nature.

Haladyna, Olsen, and Shaughnessy (1983) explored the relationships of seventh-grade students, teachers, and learning environment variables to science attitude using their Inventory of Affective Aspects of Schooling. Three variables -- sense of the importance of science, fatalism (the students' perceived ability to affect their own success at school), and self-confidence -- were found to be significant in relation to science attitude. There was also a large number of teacher variables identified, suggesting that the teacher who conducts science classes in a systematic and orderly manner and who varies activities and uses materials in interesting ways is apt to have students who are positively disposed toward science.

All of the above-reported studies suggest that positive student attitude and achievement can go hand-in-hand in a well-structured classroom.

The foregoing literature review summarizes what is currently known/believed about those classroom variables that the researcher found to be significant to the study.

CHAPTER THREE: THE RESEARCH SITE

District/Community

To its residents (and for purposes of this report), the boundaries of the Pine Forest School District and the community of Pine Forest are conterminous; the question as to whether one is a native of Pine Forest is answered with a "yes" or a "no" depending on whether or not the respondent attended the Pine Forest schools (or one of the smaller schools which later became a part of the Pine Forest School District through consolidation). This is significant in view of the fact that the only village in the community is also named Pine Forest.

Pine Forest is located within a rural, sparsely-populated area in the Upper Peninsula of Michigan. It encompasses three townships and covers almost 300 square miles. Much of it is forested. Some has been cleared for farming; much of this is no longer farmed, however. Accounting for approximately one-third of the district's area is the Limestone Peninsula which juts out into one of the Great Lakes. Three rivers empty into the lake near the village of Pine Forest which is located at the base of the peninsula.

Pine Forest has a colorful history which was played out by the courageous, ambitious men and women who settled this wilderness area of the Upper Peninsula of Michigan in hopes of utilizing its abundant resources (forests, soils, minerals, and waterways) to build good lives for themselves and future generations. They came mainly from the more populous areas of this nation, from Canada (French Canadians), and from Europe, especially the Scandinavian countries. They existed peacefully with the few Indians who already inhabited the area and were occupied mainly with fishing, hunting, and trapping.

The settlement known as Pine Forest grew up around a lumber-milling operation and thrived in the latter half of the 1800s and the early 1900s. It was the seat of county government from 1850 to 1865. It had several stores and shops, a bank, a movie theater, an opera house, a dozen or more saloons, and a house or two of ill repute. There were churches and schools and a hospital.

All of these were supported mainly by those engaged in the logging industry. The vast forests surrounding the settlement were dotted with lumber camps. Smaller settlements grew up around other milling operations. The waterways provided economical transportation to ready markets. The overland road and railroad systems were being improved and extended, providing increasing opportunities for commerce.

As land was cleared and the population grew, farming took on more importance. Many men worked in the

woods during the winter and farmed during the growing season. Some also engaged in commercial fishing to supplement the family income. Women and growing children took care of matters at home while the husbands/fathers were in the lumbering camps, often for months at a time. It was generally a hard life but one filled with hope and promise.

Fortunes can change, and this applies to communities as well as people. A misunderstanding over some land for a railroad lake terminal at Pine Forest resulted in the terminal being constructed at Claxton rather than Pine Forest. The subsequent transfer "under the cover of night" of the county records to Claxton further determined that it would develop as the center of commerce while Pine Forest would assume the status of an "outlying" community. As such, the unincorporated village of Pine Forest now has three gas stations, two of which sell groceries also; two restaurants; one gift shop; and a cheese factory with a retail store, all of which survive because of the business of travelers on the major highway which passes through the village. On a side street are two branch banks, a post office, a variety store, a small antique shop, and a bar-restaurant which cater mainly to the local trade. In the village also are a large Catholic church, smaller Lutheran and Congregational churches, and the elementary school building.

Various attempts at claiming minerals have proved unsuccessful, farming in the area is no longer profitable for many, the decline of the fish population and the

resulting regulations have limited the potential for commercial fishing, and the lumbering era is past. The only mill in the area now is a paper mill, and it is located in Claxton.

Many of Pine Forest's citizens are employed at the mill and travel to work in less than half an hour by car. A majority of the working people living in Pine Forest are employed outside the community but choose to live in Pine Forest, not unlike people living in rural communities throughout America who feel that modern transportation and communication make it possible to "taste" urban life while "savoring" small town-country living.

Among the attractions of Pine Forest are its opportunities for hunting and fishing. Its climate, forests, open spaces, lakes, and rivers provide a wide range of summer and winter recreational activities. Because of this there are many summer cottages and hunting camps in Pine Forest, especially on the Limestone Peninsula.

Among the assets of Pine Forest in the minds of many of the inhabitants are its small schools. Advocates of the schools cite the personal consideration a student receives when the school staff know the families of the students. They feel this outweighs potential disadvantages, such as the limited course offerings available.

School

The school system dates back to the 1870s. There were several neighborhood one- or two-room grade schools in

those early years. By 1909, the school in the village of Pine Forest graduated its first high school students. In 1948, all the schools in the three townships formed one consolidated district, with a high school in the village and three elementary schools scattered throughout the district. By the fall of 1957, with a new elementary school ready for occupancy, all of the children attended school in the village.

The one-story brick school building where the study took place was first occupied in September of 1977. It still looks new. In it are housed grades four through twelve. It is attractively set among a stand of pines at the end of a winding paved driveway several hundred yards off the main highway and two miles "up the hill" from the village.

Pine Forest's kindergarteners and first through third graders are still housed in the older, but well-kept, elementary building in the village.

All but a handful of students ride buses to school. Automobiles and the practice of carpooling make extracurricular activities accessible to most students. Indeed, school sports and music activities serve as entertainment for many adults in the community so these activities provide an important link between the school and its support community.

The total school enrollment on the fourth Friday in October (the day student count is determined for purposes of distributing state financial aid to the schools of

Michigan) was 615. The enrollment has gradually declined over the past several years, as has that of the other schools in the area. This fact has further compounded "tightening-of-the-belt" measures in the school system necessitated by a reduction in state funding for schools which was brought on by Michigan's financial difficulties in the early 1980s.

Pine Forest's financial problems reached a crisis point in the fall of 1982 when repeated millage failures resulted in a situation in which school began in the fall but would not be able to continue for the full year unless a millage renewal passed. After student busing had been eliminated for a month, a reduced proposal did pass, enabling school to stay open and the buses to run again. Significant reductions had to be made in the school's academic program, and budgetary funding for extracurricular activities was essentially eliminated for the 1982-1983 school year.

The administrative structure of the school saw changes during the year preceding the study, beginning with the resignation of the superintendent of several years in the summer of 1983. He was replaced by the high school principal. The social studies teacher from the high school was subsequently named high school principal. The elementary principal resigned late in the summer of 1984 to accept a position elsewhere, and a former high school teacher in the district, who had been on layoff, accepted that principalship. All three administrators are men.

The rest of the staff of the school has been quite stable over the past several years. There were staff reductions due to the program cuts, but retirements and another resignation have resulted in the recall of the people who were on layoff.

During the course of the study the researcher learned much about junior high and high school life at Pine Forest from the morning announcements. Each day a few minutes before the end of the second period (the hour when the seventh-grade science class met), the school secretary's voice came over the intercommunication system to every junior high and high school classroom with "May I have your attention, please, for the following announcements?" The announcements which followed chronicled the "legitimate" extracurricular aspects of the school milieu. Announcements were made in the same manner during the sixth period of the school day as well.

Announcements were submitted to the school secretary by the principal, guidance counselors, teachers, students and others representing student clubs and organizations, and -- on occasion -- citizens of the community. The secretary (or students under her direction) compiled and prepared them for dissemination. The same items, with the addition of attendance information and notices for teachers only, were also typed and distributed to the staff each morning and afternoon. The frequency and the extensiveness of the announcements attest to the importance attributed to keeping the students and staff

informed of school happenings.

The researcher was able to obtain copies of all the announcements for the 1984-1985 school year. They served as a rather complete record of extracurricular activities. They largely ignored academic matters which were routine and as such did not require special notice. Selected items from the announcement sheets are included herein to aid the reader in developing an appreciation for the variety and scope of activities contributing to the milieu of Pine Forest School.

In addition to academic lessons, Pine Forest's young people also have available to them a variety of opportunities to develop nonacademic skills:

> Any student who has not taken Hunter's Safety and would like to, please contact Mr. Knapp in Room 109. (AN 9-11-84)
>
> A sign-up sheet is in the office for all interested students wanting to take drivers ed. (AN 9-14-84)
>
> There will be an eleven-week ceramics class from October 13th to December 22nd every Saturday for 7th and 8th grade girls. For more information, contact Shelly Martin. (AN 10-10-84)

Sports activities are a very important facet of extracurricular life at Pine Forest school. There is junior varsity football when the school year begins in the fall. The fall and winter months are taken up with basketball; there are boys and girls junior high, junior varsity, and varsity teams. Each football and basketball team is represented by its own squad of cheerleaders. In the spring there is boys and girls junior high and high school track.

Throughout the year the daily announcements abound with sports-related notices:

> Girls basketball practice will be at 6:30 tonight instead of after school. (AN 9-10-84)
>
> The varsity football team will meet in Room 202 at 3:15 today. Refreshments will be served by Coach Meyer. (AN 10-15-84)
>
> There will be no 7th and 8th grade cheerleading practice tonight. You will be notified of the next practice. (AN 11-12-84)
>
> A basketball clinic will be held for the 7th and 8th grade girls on December 8th from 9:00 a.m. until 11:00 a.m. You must sign up before November 30th in the office. (AN 11-17-84)
>
> There will be a meeting for all 7th grade boys interested in playing basketball Tuesday, December 4th, in the auxiliary gym at 11:30 a.m. and a meeting at 12:30 on Tuesday in the auxiliary gym for 8th grade boys interested in playing. (AN 11-30-84)
>
> URGENT!! Mr. Lyle is looking for a volunteer to operate the video camera at basketball games. If interested, submit your name to him. (AN 2-4-85)
>
> Congratulations to Coach Lyle and the boys varsity basketball team for winning the district championship. We're all behind you for the regionals. Good luck!! Mr. Ashbrook [principal]. (AN 3-11-85)
>
> Congratulations to the J.V. and varsity cheerleaders on their fine performance on Sunday at the first annual cheerleading competition at the Claxton Mall. The varsity placed first in the radio cheer, second in their dance routine, and third in their cheers. Congratulations, girls; you did a nice job!!! (AN 3-18-85)
>
> The junior high girls first track meeting will be next Monday, April 22nd. You must be at the meeting. All physicals should be taken care of by this time. (AN 4-18-85)
>
> Congratulations to the boys varsity track team for winning the conference track championship yesterday and to the girls for finishing runners-up. (AN 5-9-85)

As is the practice in most area schools, Pine Forest has a Sports Boosters club made up of parents of athletes and other interested adults in the community. Its original function was to finance some of the "extras" of the sports program which were not covered within the school budget. In the 1982-1983 school year, when the entire athletic program fell victim to budget cuts due to repeated millage failures, the Sports Boosters totally financed the sports program.

Pine Forest also has a Music Boosters club. It came into being sometime after the Sports Boosters. The extracurricular aspects of the music program were targeted to be cut at the same time and for the same reason that the sports program was threatened. The Music Boosters also "saved" their program by supporting it during that troubled year. At the end of that year the music program was reinstated. The Music Boosters once again augment the program by helping to finance trips, by buying special band instruments, etc.

The sports program, on the other hand, still relies rather heavily on the Sports Boosters for support. Funding for the varsity teams comes from the school budget, but the club supports the junior varsity and junior high teams.

Although many area schools have Sports Boosters clubs, Pine Forest is the only area school with a Music Boosters club. This may be an indication that the people of Pine Forest value nonsport activities -- at least the music

program -- more than do the people in comparable area school districts. An ethnographic study conducted in an area school (Simpson, 1983) found basketball to be the key linkage between that school and its host community; perhaps the residents of Pine Forest are more diversified in their interest in and support of their school than are their counterparts in that other school.

Pine Forest has a strong music program due to the combination of an aggressive band/music teacher, Mr. Bradford, and the support of the Music Boosters. The following announcements tell of some of the music activities:

> Congratulations to the honors band students on an excellent concert yesterday in Superior. Pine Forest can be very proud of the excellent involvement in this prestigious band by the Pine Forest band students. Mr. Bradford. (AN 11-5-84)
>
> A very appreciated thank you goes out to the senior band for playing at Sunday night's Pine Forest Businessmen's meeting. As always, the band did an excellent job. Mr. Bradford. (AN 11-6-84)
>
> The Pine Forest Music Department proudly presents its Christmas Concert on December 13th at 7:30 in the gym. Admission is free. (AN 12-13-84)
>
> The Pine Forest Music Department will present a pops concert on Monday, March 25th, at 7:30 in the gym. Admission is free. (AN 3-22-85)
>
> Congratulations to all the music students. The concert was excellent last night. What an outstanding way to end the school year. Thanks again for a great job. Mr. Bradford. (AN 5-10-85)

Some of the other school activities available to Pine Forest students are documented in the following announcements:

> Any high school student who wants to be on this year's quiz bowl team, contact Mr. Gauthier. (AN 9-13-84)
>
> Anyone interested in working on the 1985 yearbook staff, please sign the sheet in the office. (AN 9-13-84)
>
> There will be a meeting Wednesday, September 26th, at 10:05 in the media center for any sophomore, junior, or senior interested in joining Junior Achievement [J.A.] this year. Two nights, Monday and Tuesday, will be available for J.A. Information sheets can be picked up in the office. (AN 9-21-84)
>
> Congratulations to Johnny Ryder for being one of 25 seventh-grade U.P. finalists in the junior high math competition held at State University on Saturday. There were over 300 competitors from across the U.P. Johnny is now eligible to compete on the state level on May 18th. Congratulations and good luck, Johnny!! (AN 4-15-85)
>
> The Pine Forest High School Drama Club will be presenting a one-act play, "Happily Never After," on May 3rd and 4th at 7:30 in the school cafeteria. Members of the cast are: [twelve students]. Others who are helping in the production are: [six students]. The course of true love never runs smoothly; consequently, the author of fairy tales, now turned marriage counselor, has opened an office in the kingdom to see how famous couples, such as Cinderella and her prince and Sleeping Beauty and her prince, are getting along. Come hear about their problems and see how the marriage counselor solves them. The cost is $1.00 for students. (AN 5-3-85)

The school announcements serve as a kind of community bulletin board for those community activities and opportunities of interest to Pine Forest students. Some families with children in school have no other consistent link with the community. Many do not subscribe to either the Claxton Daily or the County Weekly Papers. Many do not shop in Pine Forest nor do they attend any of the community's churches. Therefore, the best way to spread the

news of concern to school-age young people is through the school. Some of these announcements are given below:

> Attention junior high students: There is a Youth Chorus at the Claxton Civic Center, and it begins Monday, October 15. No audition is required. For more information pick up a registration form in the office. (AN 10-12-84)
>
> There is a sign-up sheet in the office for anyone interested in babysitting for families during the Pine Forest Homecoming on July 4th, 5th, and 6th. You must be in grades 9 through 12. (AN 1-9-85)
>
> Pine Forest French students: We would like to thank you for your contribution to this year's Young Folks' Fest. You did a terrific job! Your mingling with the audience really added a lot also. We commend your team effort, and your school should be proud that you represented it in a special way. Thanks for sharing. Sincerely, US Inc. (AN 1-28-85)
>
> On February 9th there will be an old-time folk concert presented by the county "Friends of Folk." This is being held at the Claxton City Theater at 7:30 p.m. The cost is $3.50 for adults and $1.50 for students. (AN 1-30-85)
>
> The Limestone 4-H meeting has been cancelled for tonight. It will be rescheduled in March. (AN 2-4-85)
>
> All Memorial Day queen candidates will meet in the conference room on Thursday, March 21st, 1985, at 9:15 a.m. (AN 3-19-85)
>
> Anyone wishing to sign up for Claxton girls Little League and Senior League [baseball], please pick up an application form during noon hour. A representative will be here in the cafeteria area. (AN 4-30-85)

An especially active group of young people of Pine Forest is the Reach Out Christian Kids (ROCK) club. Although it is led by Pastor Thompson of the Congregational Church, it is nondenominational and is made up of youth from each of the community's churches as well as some who do not regularly attend a church. It is subdivided for some

activities into a junior high group (grades seven and eight), a junior varsity group (grades nine and ten), and a varsity group (grades eleven and twelve). Their varied activities are suggested by the following announcements:

> There will be a dance Friday night for grades 7-12 from 7:3Ø to 1Ø:45. The dance is being sponsored by the Varsity ROCK Group. The dance is a "Toga Dance." People dressed in togas get into the dance for $1.5Ø, and people who don't wear togas have to pay $2.ØØ. There will be a professional D.J., and refreshments will be served. (AN 1Ø-1Ø-84)

> This is it!! The biggest banana split ever built in Pine Forest. Come join the fun November 11th at 6:3Ø right here at school. There's lots to talk about: T-shirts, winter parties, reach out activities, summer plans, and election of officers. Kids from Junior High ROCK are to bring one-half gallon of vanilla, chocolate, or strawberry ice cream. Junior Varsity ROCK are to bring any kind of topping, and Varsity ROCK are to bring bananas or nuts. The total ROCK group will meet together and then split off into their individual groups. (AN 11-6-84)

> There will be a ROCK group meeting on Monday night at 7:ØØ at the Congregational Parish Hall. We will be wrapping boxes to send overseas to the needy. Please bring masking tape, scissors, boxes especially, and anything else you think the needy might like. Please try to attend this meeting. (AN 12-7-84)

> A group of 2Ø kids from Cedar Falls [small town between Pine Forest and Claxton] and Pine Forest is going to Milwaukee to see Petra, a nationally-known Christian Rock group. They will be leaving at noon on Monday, May 27th, and returning at five on Tuesday. Petra has sent two extra tickets. The cost of tickets are $7.5Ø. If interested in going, contact Pastor George Thompson at 361-2958. (AN 5-1Ø-85)

The school secretary reported that as many as 2ØØ young people attended some of the ROCK functions.

As suggested earlier in the discussion about the Sports Boosters and the Music Boosters, the Pine Forest

School budget allows for what its constituency considers to be the educational essentials. Those "extras" that make schooling a more diversified experience are generally financed by voluntary contributions, usually in the form of support for some type of money-making project sponsored by a special interest group (i.e. class or club). The success of such activities attests to the fact that the citizenry of Pine Forest is willing and able to support a well-rounded school experience but want to be free to decide what activities they will support and how extensive that support will be. As a result, the school is a veritable marketplace. The daily announcements contain many advertisements documenting the scope of these fundraising activities:

> Attention all seniors: The QSP representative will be here next Tuesday at 8:30 to present information and get you started on your magazine sales. You will be excused to the cafeteria after roll is taken 1st hour. (AN 9-20-84)
>
> Orders for French [sold by students from the French classes] T-shirts, buttons, hats, folders, etc. will be taken, starting today. Brochures are posted in Rooms 207 and 301 for interested students. Money should be paid when orders are placed. See Mrs. Benchley to place an order. (AN 10-12-84)
>
> Band students: Raffle tickets and money must be turned in by Friday, October 26th. (AN 10-23-84)
>
> Be a Cardinal fan. Have your name printed on the boys varsity basketball programs. The sign-up sheet is in the office. The cost is $1.00. (AN 11-2-84)
>
> The cheese and sausage orders have arrived [Parent-Teacher Club]. Pickup times are Thursday, December 6th, from 3:00 to 7:00, and Friday, December 7th, from 3:00 to 7:00. (AN 12-6-84)
>
> Christmas specials [from the school store]: All remaining class jerseys are $8.75, and gym bags are

now $9.ØØ. Prices are good only this week! (AN 12-18-84)

Students: Remember to hand in your Easter egg money to the office as soon as you can. (AN 3-12-85)

There will be a cupcake sale sponsored by the cheerleaders Thursday, March 28th. (AN 3-25-85)

To all the hale and hearty!! There will be a skate-a-thon at the rink in Claxton on Saturday, April 20th. Help out the Foster Grandparent program. Let's keep those grandmas and grandpas busy!! Pick up your pledge envelopes in the office. (AN 3-28-85)

Besides the numerous items sold as fundraisers to benefit some segment of the school program, there are sales to students by outside vendors of the traditional school memorabilia:

A reminder to students: School pictures will be taken on Thursday. (AN 9-12-84)

Sophomore ring orders will be taken next Tuesday during all three lunch periods. Please make sure you have filled out your order properly and have your $1Ø.ØØ down payment. (AN 9-2Ø-84)

There is a sign-up sheet in the office for anyone who wants pictures taken at the homecoming dance. Please bring your money to the dance to pay for the pictures. (AN 2-7-85)

Not surprisingly, the most important subgroup within Pine Forest is that of class (grade in school). This corresponds to the classic anthropological notion of age-set. Generally the higher the class, the greater the privilege and responsibility accorded it, as the following announcement illustrates:

Class elections will be held Wednesday at 9:15 during the last fifteen minutes of 1st hour. During these elections each class will elect a president, vice president, treasurer, and secretary, along with student council

> representatives. Each senior high class will elect two student council representatives, and junior high classes will elect one per class. Nominees for homecoming court will also be taken. Seniors will select three couples; juniors, one couple; sophomores, one couple; and freshmen, one couple. These people will make up the court for the September 29th homecoming game against Central. All classes are encouraged to use the time wisely so there is sufficient time to finish all class business. (AN 9-10-84)

One way to encourage/demonstrate a feeling of class affiliation is through competition between the classes:

> As you all know, the class that dresses up the most will get into the homecoming game on Saturday free, so come on and show your class spirit and dress up! The seventh grade is in first place, the seniors are in second place, and the eighth grade is in third. (AN 9-10-84)

> Attention students: Represent your class and community in the Pine Forest Memorial Day parade. Build a float based on the theme of World War I. You have a chance at winning $100, $75, $50, or $25. For more information, call 361-4981. (AN 3-21-85)

A party at Pine Forest School usually means a dance. (The band banquet mentioned earlier and a sports banquet were apparently the only exceptions to the "dance-party" custom for the year.) Besides being a chance to socialize, a dance is frequently a profit-making venture for some group. The prom, however, is not a fundraiser. The following announcements represent the variety of dances held throughout the year:

> There will be a junior high dance this Friday night from 8:00 to 10:00 p.m. The price is $1.00, and you can bring records to play. (AN 10-18-84)

> The Pine Forest Music Boosters will sponsor a dance Wednesday night in the cafeteria of the little school. This is a Halloween dance so dress

> up. The best costume will win a prize. The time is from 9:ØØ to 1Ø:3Ø p.m. (AN 1Ø-3Ø-84)
>
> This year's spring prom [sponsored by the Student Council] will be held on April 6th, 1985, at the Holiday Inn. We will have a live band, and also a buffet dinner is included in the ticket price. The cost of tickets are $3Ø.ØØ per couple and $15.ØØ for singles. Tickets will be for sale until March 29th, and absolutely "NO" tickets will be sold after this date. When you purchase tickets, please sign the reservation list in the office. The dinner will be at 6:ØØ p.m. with the dance following at 8:ØØ p.m. The dance will last until 12:ØØ midnight. Please hang on to your tickets because you must have them to get in at the door. (AN 3-14-85)

The announcements play an important role in disseminating information from the guidance office. Even though much of the information pertains mainly to juniors and seniors, it serves to alert the younger high school students and the junior high school students to opportunities that may soon be open to them and to decisions they will soon be called upon to make. These announcements are about such things as:

High school courses, schedules, etc.

> Students who want to change their schedules for next semester and have a good reason to change, contact the guidance office by Friday, January 25th. This includes art and home economics students and students who are repeating a failed class. (AN 1-22-85)
>
> Monday, February 11th, all sophomores please report to the cafeteria after roll 1st hour for a vocational education presentation to help you decide what vocational education program you want to attend next year. Bring a pencil. Sophomores will eat lunch first and then take a bus to visit the various programs of their choice. (AN 2-4-85)
>
> Students interested in State College's summer youth programs, contact the guidance office. State College offers one-week programs in

engineering, ecology, fine arts, and computer technology. (AN 4-11-85)

Preparing for college

College-bound seniors should consider ROTC [Reserve Officers Training Corps] scholarships. Those scholarships can provide tuition, fees, and $100 per month. For more information, contact the guidance office. Do not forget College Night at 7:30, October 10th, at Community College. ROTC representatives will be there. (AN 10-3-84)

Students should be aware of the various scholarship search vendors. These so-called personalized computer lists refer to millions of dollars of unused, unclaimed financial aid. Fees for this service can run as high as $50. There is little evidence to suggest that scholarship search vendors will help students "lay claim" to whatever "unclaimed" dollars do exist. (AN 11-5-84)

State University will hold a workshop for high school students on "How to Ace the ACT (American College Test)" on December 1, from 9:00 to 12:00, with a tuition fee of $15.00 per student. For more information, contact the guidance office. (AN 11-9-84)

Juniors and their parents are also invited to the financial aid meeting Wednesday, January 9th, at 7:30 p.m. in the library. College-bound seniors and their parents should, if possible, attend this meeting. (AN 1-3-85)

Employment opportunities

The Michigan Occupational Information System is now located in the computer room. This system gives complete information on over 1300 occupations. A computer search is available to assist you in deciding which occupations best meet your needs. From that list you may find the microfiche and, using the reader, you will find fourteen pages of information relating to that occupation. (AN 11-6-84)

UP CAP [Upper Peninsula Commission for Area Progress] will be operating a summer youth employment program again this year. The program will start in early June. Eligible individuals must be from fourteen through 21 years old and meet the low income guidelines. However, priority for job placement will go to those sixteen through 21 years old. Youth selected will be allowed to

> work 260 hours this summer at $3.35 per hour. Pre-applications may be picked up in the guidance office or the main office. (AN 4-16-85)

The armed services

> Tenth-, 11th-, and 12th-grade students interested in taking the Armed Services Vocational Aptitude Battery, sign the sheet in the main office. This test is free and will give you an idea of your abilities in many areas. Please take the booklet next to the sign-up sheet for more information. The test will take three hours to complete. The test will be given in the library starting at 8:30 a.m. Tuesday, November 27th. (AN 11-19-84)

Student foreign exchange programs

> Juniors, if you have a grade point average of 3.2 or higher [on a four-point scale] and demonstrate leadership potential, Youth for Understanding has programs for student exchange in Japan, Germany, and Finland. For more information, contact the guidance office. (AN 10-16-84)

Et cetera

> If there are any senior girls interested in the Michigan Junior Miss Scholarship program, contact the guidance office. (AN 10-16-84)
>
> Any junior girls interested in Girls State sponsored by the American Legion Auxiliary, please sign up in the office by November 29th. (AN 11-13-84)
>
> The Upper Peninsula Teen Leadership Training is a week-long program which will be held on the campus of State University August 4th through 11th, 1985. Between 50 and 60 high school sophomores and juniors are expected to participate in this intensive skill-building training which will prepare them to assume active leadership roles within their schools and communities. Although a wide variety of material is covered, special emphasis is given to addressing substance abuse issues. (AN 3-7-85)

It is apparent that "school" to the students and teachers of Pine Forest and to its support community means much more than learning/teaching/supporting academic lessons. The term really includes all of the aspects

mentioned above, as school attendance is a young person's present and future "ticket" to many activities and opportunities.

Classroom

The classroom where this study was focused and where most of the formal participant-observation took place is a large room designed for the dual purposes of instruction/study and laboratory activity. (See Figure 2.) It is bright, spacious, and well maintained.

There are two doors leading to the hallway on one side of the room, one near the front of the room and one near the back. In the opposite wall toward the front of the room are two long narrow windows overlooking the front lawn of the school, the faculty parking lot, and the evergreens beyond.

There are three rows of five two-student tables in the room. The teacher's desk and a laboratory demonstration table face the student tables. At the front are a bulletin board and a chalkboard. At the front also is a door leading to a narrow storage-work area which extends most of the width of the room and is shared with the adjoining science room. Lining the walls of the room are tall storage cupboards and cabinets with counters containing a total of nine laboratory setups.

This, then, is the stage upon which the study was set. Chapter Four introduces the players: Mrs. Randall, the teacher, and her 28 seventh-grade science students.

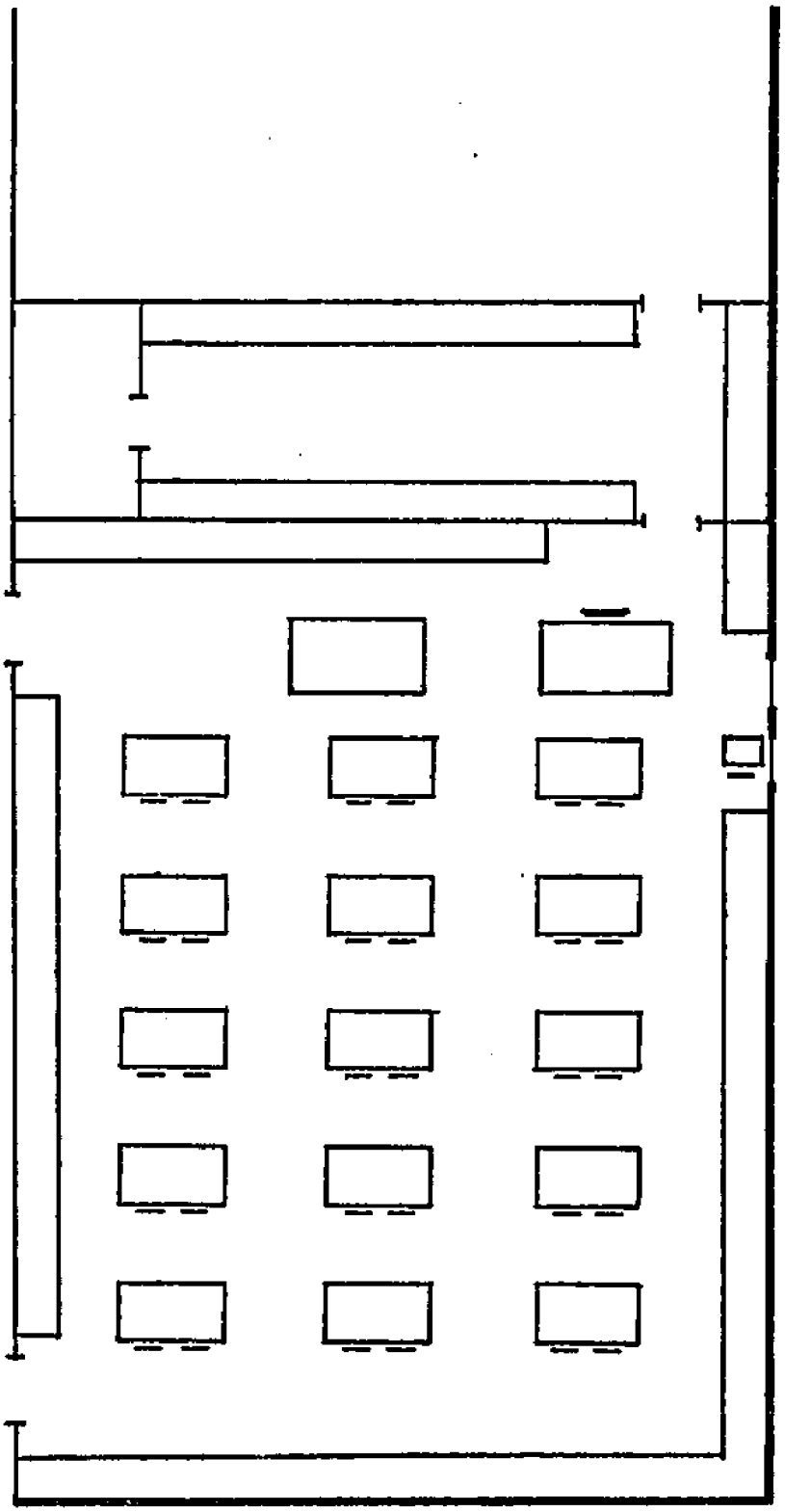


FIGURE 2. SEVENTH-GRADE SCIENCE CLASSROOM

CHAPTER FOUR: TEACHER AND STUDENTS

Because of the emphasis in ethnographic inquiry on understanding a setting as it is viewed by the participants within it, the subjects in such a study are important in and of themselves to a much greater extent than is the case in predominantly quantitative research. The main subjects/participants in this study are Mrs. Randall, the teacher, and the 28 seventh graders who made up her second-hour science class. They are profiled herein in order to characterize the social system studied.

Teacher

Mrs. Randall is an athletic-looking young woman of medium height and build. Her school attire is neat and unpretentious, favoring blazers, blouses, and/or sweaters with slacks or skirts to more formal suits and dresses.

It is apparent from her demeanor that Mrs. Randall likes and respects people -- adults and students alike -- and it is also obvious that they return her regard. She exudes a quiet, friendly competence and confidence that is a mark of her professionalism.

She and her husband live about fifteen miles from the school building in which she teaches. Their home is in

the Claxton School District, a short distance from the home in which she lived as a child with her parents and eight brothers and sisters.

Mrs. Randall did not begin college with the goal of preparing for a career in teaching; nor did she graduate from the university confident in her teaching ability. In fact, her arrival at a career that now seems so right for her can almost be classified as coincidental. Further, the lack of career direction which she received heightened her interest in guidance counseling:

> I really didn't plan on going into teaching when I went to [college]. I always wanted to be a teacher when I was younger. Played school; loved to be the teacher. But then, when I got older in high school, I guess I just never did much career exploration. I guess something I'd really like to do more of here as a guidance counselor is [to] have students explore more career options....
>
> And I went to State University, scored real well on the math, so they put me in calculus. Went through the math. Then what do you do with a math major? When you get to your junior year, "What are you going to do with that, Sally? Are you going to be an actuary? Are you going to go into manufacturing? But you're not an engineer; you're a mathematician. And that means more coursework in mathematics." And I was getting to the point where the higher math was -- It was okay, but I wasn't feeling my way too well. So, "Okay, let's cap it at 40 credits and go into a secondary education degree...."
>
> And when I student-taught, I didn't do a real good job of student teaching, to be honest with you. I really wasn't sold on the idea of teaching yet, see. And the people I was working under....I don't think they were sold on me as being a teacher either....The confidence wasn't there....
>
> I substitute-taught for the first year, and I think that helped me. It helped me think about discipline more....You have to go in there and not be the nice gal when you're subbing because they'll walk over top of you. So that did help.

> And to see different people -- how they taught, different lesson plans, and how they -- I think that was really a good experience for me. And then I guess when I got the job here at Pine Forest, I had my mind made up. (SR INT 9-17-85)

Mrs. Randall has secondary certification with a mathematics major and a science minor. As may often be the case in relatively small schools, her subject area assignment varies according to the changing needs of the school:

> Well, actually I didn't decide [to teach science]; I originally wanted to teach math, but the opening here was in science nine years ago, so I applied and got it -- the life science and the metrics class -- and they were part-time. And ever since then, with Bob Everson and a small school district, they only need one math teacher, and he's it so I'm in science. But now I like it; I like teaching science....
>
> I thought I would [prefer math], but then I taught math at the junior high level one year -- two years ago -- to seventh graders, and I was real frustrated with it because I couldn't believe that they couldn't do some of the simple things that were -- you know, just come second nature, I guess....
>
> At this lower-level science...you can fill in with so many things. I mean there is such a wide range of things you can do with science to get your subject matter across or...[to] go off on a tangent [to] talk about a newspaper article or talk about something current, not just textbook material; whereas in math I think you're locked in to cover this section, cover that section, to go right along. You can do more things with science. (SR INT 9-17-85)

When Mrs. Randall was substitute-teaching, she taught at many different age levels as well as in many different subject areas. Those experiences undoubtedly helped prepare her for the variety of age levels she has taught since that time. A computer class which she set up

and taught during the 1984-1985 academic year was for students in grades four through six. Over the past nine years she has taught science and/or math classes at each level from the seventh through the twelfth grades. She has taught computer classes in the community school adult education program in Claxton, and during the 1985-1986 school year is teaching a college-level computer class at Community College in Claxton.

Mrs. Randall appears to find much to like about each age group with which she has worked and, apparently, feels positive about her varied assignments as opposed to preferring any one age level exclusively. In response to a question with regard to age group preference, Mrs. Randall gave the following answer:

> That's a good question. I like the seventh graders. I don't have any seventh graders this year. I have seniors this year; I've never had seniors before. And I've never taught college before, which I'm doing. My first impression is that I like that; the discipline is not there. You know what I mean? You're teaching the subject matter and you're not worrying about so-and-so throwing spitballs, or not paying attention, or [that] the homework is not in....I enjoyed [the elementary computer students] because they were so enthusiastic....I can't really say which group I really like the best. That's a hard question, I guess. (SR INT 9-17-85)

Mrs. Randall has completed much of the coursework for a masters degree in counseling but is not at all sure she aspires to be a full-time counselor:

> I'm not sure...if I would be happy sitting in a counselor's office for six hours a day. I like to work with students....I don't know if I would be fulfilled myself with just one-on-one counseling...I don't know if I would feel -- meet my own interpersonal whatever -- be content, I

> guess that's it....I like the [student] contact. (SR INT 9-17-85)

Because of budgetary constraints, improvements may depend on a teacher's ingenuity insofar as securing the necessary funds is concerned. Mrs. Randall applied for and was awarded (early in 1986) a $650 grant to purchase equipment for her science laboratory. She was also awarded a scholarship for a summer (1985) computer workshop. Both of these awards resulted in the upgrading of educational opportunities for her students which would not have come about but for her aggressive pursuit of funding.

Mrs. Randall sometimes considers the monetary sacrifices that one makes to be a teacher, but her commitment to being an educator enables her philosophically to weather those momentary doubts:

> I like teaching; I really do. I like my day. I like everything about it. But, I would like more money in my pocket....The pay is not there but everything else is there. So, what about it, eh? We'll get along. (SR INT 9-17-85)

She is a member of the Pine Forest Education Association and was its 1984-1985 representative to the regional coordinating council. The facts that she is actively involved in the teachers organization and that she avails herself of many opportunities for professional development speak also of her commitment to her chosen vocation. That she is selected for those kinds of activities is verification of the high esteem accorded her by both her co-workers and her administrators.

The purpose of the foregoing description is to provide insight into who Mrs. Randall is; Chapter Five details the manner in which who she is translates into what she does in the classroom.

Students

There are wide ranges of differences in early adolescents with respect to physical, emotional, and cognitive maturity (Lounsbury, Marani, & Compton, 1980). Most random groups of seventh graders display these ranges. Mrs. Randall's seventh-grade science class was no exception. The students ranged in size from Doug, who was about five feet, ten inches tall and weighed about 180 pounds, to Jeannine, who was probably a foot shorter and a hundred pounds lighter. The oldest student in the class, Doug, was thirteen years, nine months of age when the year began; the youngest, Lyn, was eleven years, nine months old. Most of the students were twelve years of age. There was Carrie, who gave the impression of being "afraid of her own shadow," and Bill, who seemed as emotionally mature as the average high school senior. Linda was a relatively conscientious student, who barely maintained a D average in science, while Allan did little homework, missed 33 days of school during the year, and still managed to achieve a C+ average.

The students in Mrs. Randall's seventh-grade science class presented themselves in the school setting in surprisingly similar manners in spite of all the real differences described above. Because of this, the

researcher believes that conformity must have been a very important goal for them. Physical attire was a case in point:

> One girl had on striped pants; another, sweatpants; and another, white pants. All of the other students...had on blue jeans. There were knit shirts, blouses, sweaters, and sweatshirts. Everyone was wearing tennis shoes except Danny, who was wearing hiking boots, and Janice, who had on moccasin-type shoes with soles. No one stood out as being either more poorly dressed or more nicely dressed than the others. (FN 12-7-84)

Further evidence of the students' efforts to "look" like their peers is that it was difficult to determine, by observation alone, how accademically inclined many of the young people were. There were a few, mostly the "mainstreamed" (in some regular education classes) special education students, whose poor scholarship was obvious; otherwise, several weeks into the observation phase of the study the researcher still did not have a clear understanding of who the good and the poor students were:

> Mrs. Randall and I walked out together. She told me that next week is the last week of the semester. She challenged me to guess who the good students were in response to my telling her that...I planned to concentrate on learning types of students. I claimed that I could pick out poor students better than I could pick out good ones. (FN 1-11-85)

The researcher strongly suspects that some of the better students may have suppressed their potentials for more effective class contribution in order to look like "average" seventh-grade science students.

School records and school personnel provided the following numerical data which add to an understanding of

the students in Mrs. Randall's seventh-grade science class.

Enrollment/Attendance

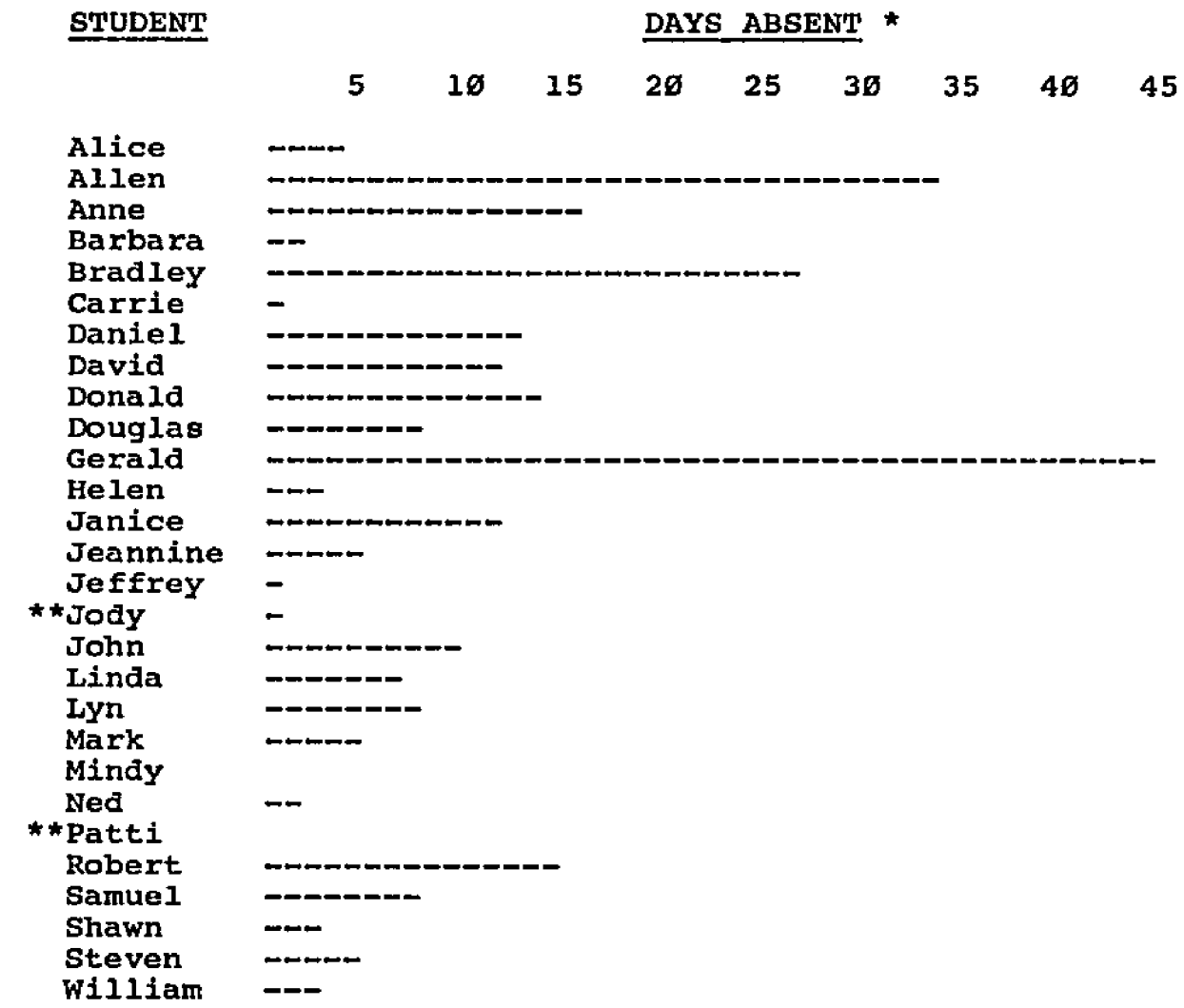
There were 26 students enrolled in the class at the beginning of the year. Seventeen of those were boys; nine were girls. One girl, Patti, and one boy, Jody, moved into the district and joined the class during the year, bringing the total enrollment to 28.

One-half (fourteen) of the students had attended only the Pine Forest Schools. Four more had spent less than a year at a school other than Pine Forest. Not all of the records regarding former schools of the move-in students were complete, but there was documentation that Allan had changed schools ten times during his eight years of schooling.

There were 178 student attendance days in the 1984-1985 school year. "Snow days" were the reason for there being fewer than the 180 in-session days required by Michigan law. Mindy maintained perfect attendance for the entire year. At the other end of the scale was Gerry, who missed 45 days. (See Figure 3 for individual attendance information.)

Parents/Siblings

There was no available information about the educational level of the parents of four of the students. Information on the other 24 students indicated that both parents of eighteen of them are high school graduates, five



*Shown at the lesser full day
**Enrolled only part of the year

FIGURE 3. STUDENT ABSENCES DURING 1984-1985 SCHOOL YEAR

others have one parent with a high school diploma, one or both parents of twelve of them have had some formal education beyond high school, and five students have one or more parents with at least a four-year college degree.

Forty-one percent of all the school's seventh graders were not living with both of their original parents (as opposed to natural because some were adopted). This percentage is much higher for this group than for the Pine Forest classes older than they:

Seniors	16.6%
Juniors	23 %
Sophomores	22.5%
Freshmen	26.3%
Eighth graders	32 %
Seventh graders	41 %

The younger the group, the higher the incidence of not living with both original parents in spite of the fact that there has been less time for the family unit to be disrupted. The consistent increase suggests that something other than chance is at work. Part of the difference may be accounted for by mandatory school attendance until age sixteen. That is, children from less "stable" homes may be more apt to drop out of high school, in which case they would no longer be represented in the statistics. This would not explain the differences in the three younger grades, however. Two other factors may be involved: (1) The pullout of a major manufacturer in Claxton in 1982 has caused a significant number of families to move out of the area for employment elsewhere; and (2) Michigan's troubled ecomomy has resulted in the return of some young families to

the area when they lost their source of livelihood in other areas of the state. Whatever the reason(s), the figures do represent rather rapid social change.

Information on the numbers of siblings the students had was available for 22 of the 28 students. Of these, one student was from a family of five children, two were from families of four children, ten were from families of three children, eight were from families of two children, and one was the only child in his family.

Ability/Performance

In September of each year all seventh graders (as well as fourth and eleventh graders) in the state's public schools take the Michigan Educational Assessment Program (MEAP) tests of reading and mathematics. Table 1 shows how Pine Forest's seventh graders have compared with all the Michigan seventh graders who took the test in 1980, 1982, 1983, and 1984. Pine Forest's achievement was higher than the state average in all but the mathematics portion of the subtest for 1983 (only .2 percent lower) and 1984.

Figure 4 shows the individual scores for the 28 students in Mrs. Randall's class. Bill was the only one of those seventh graders who obtained all the objectives tested: twenty-eight of 28 in mathematics and 23 of 23 in reading. Danny obtained the fewest objectives: fourteen of 28 in mathematics and seventeen of 23 in reading.

With the exceptions of the three mainstreamed special education students (Danny, Doug, and Shawn), each of

TABLE 1. PINE FOREST'S AND MICHIGAN'S SEVENTH GRADE MEAP PERFORMANCE

MATHEMATICS

ACHIEVEMENT CATEGORY *	PERCENTAGE OF STUDENTS 1984		1983		1982		1980	
	PF	MICH	PF	MICH	PF	MICH	PF	MICH
4	54.9	65.7	63.6	63.8	63.2	62.5	68.0	58.7
3	39.2	25.6	29.1	26.8	29.8	27.4	28.0	27.9
2	5.9	7.4	5.5	7.9	7.0	8.5	4.0	10.7
1	0.0	1.4	1.8	1.5	0.0	1.6	0.0	2.7

READING

ACHIEVEMENT CATEGORY *	PERCENTAGE OF STUDENTS 1984		1983		1982		1980	
	PF	MICH	PF	MICH	PF	MICH	PF	MICH
4	90.2	80.8	87.3	80.2	91.2	80.1	96.0	76.7
3	3.9	11.6	9.1	11.7	1.8	11.5	4.0	12.4
2	5.9	6.2	3.6	6.5	5.3	6.8	0.0	8.5
1	0.0	1.4	0.0	1.6	1.8	1.6	0.0	2.4

*Category 4 contains the percentage of students who attained about 3/4 or more of the objectives; Category 3, the percentage who attained about 1/2 to 3/4; Category 2, the percentage who attained 1/4 to 1/2; and Category 1, the percentage who attained about 1/4 or less.

STUDENT	MATHEMATICS OBJECTIVES (28)	READING OBJECTIVES (23)
CATEGORY 4		
William	----------	----------
Douglas	----------	----------
Barbara	----------	----------
Jeannine	----------	----------
Robert	----------	----------
Allen	----------	----------
Anne	----------	----------
Carrie	----------	----------
David	----------	----------
Mindy	----------	----------
Bradley	----------	----------
Helen	----------	----------
Janice	----------	----------
Samuel	----------	----------
Gerald	----------	----------
Mark	----------	----------
Lyn	----------	----------
Alice	----------	----------
Jeffrey	----------	----------
Steven	----------	----------
Donald	----------	----------
Linda	----------	----------
CATEGORY 3		
Ned	----------	----------
Daniel	----------	----------
CATEGORY 2		
(None)		
CATEGORY 1		
(None)		

NOTE: Category 4 contains the names of students who attained about 3/4 or more of the objectives; Category 3, the students who attained about 1/2 to 3/4; Category 2, the students who attained 1/4 to 1/2; and Category 1, the students who attained about 1/4 or less.

NOTE: Jody, John, Patti, and Shawn did not take the test.

FIGURE 4. STUDENT 1984 MEAP SCORES

Mrs. Randall's seventh graders was enrolled in English, science, geography, mathematics, band or study hall, and physical education. Figure 5 shows each student's average grade, based on the two semester grades for each academic subject (i.e., English, science, geography, and mathematics).

More in-depth profiles of four of the students are provided in the following paragraphs to further illustrate the diversity within the ranks of the "normal" seventh graders.

Jeannine

Because Jeannine is so small, she looks younger than many of her peers; however, she gives the impression of being ahead of many of them in social development. She and a brother, who is two years older than she, live with their parents in a housing development between the village of Pine Forest and the school. Her father is a foreman at a gas transmission plant. Her mother is a hair stylist. The family attends church and sporting events together, and they maintain a family membership at an area golf club.

Jeannine plays in the band at school. She and her friends visit in one another's homes frequently. She enjoys riding her bicycle and swimming. She sometimes babysits. She uses the family's home computer and is planning to go to college to prepare for a career in which she will work with computers.

STUDENT	AVERAGE GRADE									
John	A									
Barbara		A-								
Jeannine		A-								
Anne			B+							
Carrie			B+							
Robert			B+							
William			B+							
Mindy				B						
David					B-					
Helen						C+				
Lyn						C+				
Bradley							C			
*Jody							C			
Ned							C			
Samuel							C			
Steven							C			
Allen								C-		
Janice								C-		
Mark								C-		
Alice									D+	
Gerald									D+	
Linda									D+	
Donald										D
Jeffrey										D
TOTALS	1	2	4	1	1	2	5	3	3	2

*Second semester only

NOTE: Because Daniel, Douglas, and Shawn were special education students with different schedules and/or requirements, their grades were not reported.

NOTE: Patti's grades were not available.

FIGURE 5. AVERAGE ACADEMIC GRADES FOR 1984-1985 SCHOOL YEAR

Jeannine reported that her favorite subjects were science and mathematics. On the MEAP test she obtained all the reading objectives and all but two of the 28 mathematics objectives. She had an overall A- average for the year in her academic subjects. Her Woodcock-Johnson Psycho-Educational Battery (WJ-PEB) science grade equivalent was 12.3, placing her at the 90th percentile for her grade.

Bill

Bill is a rather slight boy who is the oldest of three brothers who have always lived with their parents in the village of Pine Forest. His father is a printer; his mother worked as a clerk in a jewelry store until the birth of his baby brother. Bill reported that the family does many things together -- attends church, swims, fishes, goes camping, etc.

Bill plays basketball and football in school and is on the track team. He is modest but confident with regard to his ability in each of these sports. He attended a summer basketball camp in 1985. In addition, he has his own bicycle and belongs to a BMX bike racing organization. Bill's classmates elected him to be their student council representative.

He is the only one in the class who attained all the MEAP reading and mathematics objectives. His WJ-PEB science grade equivalent score was 12.3 (90th grade percentile). He got a B+ in science the first semester and an A the second semester. His average academic grade for

the year was B+. He reported that he took very little work home because he had enough time in study hall to get most of it done.

Allan

Allan is an average-sized, sandy-haired, freckle-faced boy who lived with his mother and two brothers, one older and one younger than he, several miles out on Limestone Peninsula in a poorly-maintained rented house with an outbuilding and some pastureland to accommodate their pet horses.

Allan's mother was unemployed and had been for at least a year or so. Allan did not remember his father as his parents were divorced when he was very young. Allan often stood out as being more poorly dressed than his peers. His lack of personal cleanliness frequently caused him to be ridiculed by some of the other students. His reaction to this type of harrassment was to act as though he did not hear it.

Allan is somewhat of a loner. He often approached Mrs. Randall after class to tell her about a science-related activity he was doing at home or to talk about something the class had done or that he would like them to do; however, he interacted very little with the other students.

As mentioned earlier, Allan has changed schools on the average of more than once a year since beginning school. During the 1984-1985 year, he was absent an average of one school day out of five. His health information said he is

allergic to bees, has a hearing problem, and suffers from asthma.

Allan played the tuba in the junior high band. That apparently was the extent of his extracurricular school involvement. The fact that he lived several miles from school may have made some extracurricular activities inaccessible to him. Allan told the researcher that, besides horseback riding, the family enjoys going on picnics and that they sometimes go downstate to visit his grandmother.

Considering his family's substandard living conditions and frequent moves as well as his health and attendance problems, one might think that it would be difficult for Allan to survive as a student. Such judgment would not, however, be taking into account the facts that he is obviously very intelligent and, perhaps more importantly, that he loves science. His WJ-PEB grade equivalent on the science subtest was 12.9; this was at the 98th percentile for his grade. He got a C+ in science both semesters, mainly by doing well on tests and quizzes as he did not do much of his homework. His overall academic grade for the year was C-.

Perhaps the fact that Allan's schooling has been so fragmented accounts for his reluctance to establish and/or maintain friendships among his peers. It may also be the reason that he "does his own thing" as far as learning is concerned. He is not committed to doing well in school, maybe because experience had shown him that he will not be

in any one school very long anyway. Be that as it may, he appears to hunger to learn, as demonstrated by the curiosity expressed in the science survey form that he filled out for the researcher:

> [Science is] almost like an adventure where you can learn about just about anything.
>
> [Science is] easier [than other subjects], because I notice all this stuff about me and wonder how was it their [sic]. Like diffusion, say your [sic] mixing hot cocoa you just take it for granted that it spreads through the water so you don't take notice, but when its arroused [sic] in science class you begin to investigate further. (ALLAN SUR 4-16-85)

Allan and his family moved to another district during the summer of 1985.

Jeff

Jeff is a husky boy who lives with his parents and younger brother and sister in the village of Pine Forest. His father works at the paper mill in Claxton, and his mother is a noon supervisor at the school. He reported that the family sometimes spends a weekend night at a motel during the winter so they can enjoy the swimming pool. Sometime during each summer they travel downstate to visit relatives.

Jeff has many extracurricular interests. He is on the track team at school. In the summer he plays on a Senior League baseball team. He and his father are deer hunters. In fact, he bagged a deer (an illegal one, as he was too young to have a license) during the rifle season when he was a seventh grader. He supplements his allowance

in the summer by mowing lawns in his neighborhood.

Being in the seventh grade was often a frustrating experience for Jeff. He had a difficult time adjusting to the departmentalization in junior high school:

> When you're working on your afternoon classes, then you -- the next morning you go back and you forget your assignment or something for your first-hour classes....
>
> I am going to study harder [in eighth grade], because it was -- in sixth grade, it seemed like it was -- you only had one teacher and she -- he or she, just sat down and explained the whole thing in whatever time it took, and in seventh grade they kind of like rush stuff because you only have an hour in class and they forget some things and stuff like that. (JEFF INT 5-31-85)

Jeff does have some successes in school. When asked whether he liked a class because of the subject or because of the teacher, he replied:

> Both, really. Because Mr. Meyer [geography teacher], he's good to get along with, and, like, sometimes on Fridays, like today, we played a game on current events, like what happened in the news. (JEFF INT 5-31-85)

The researcher mentioned to Jeff that on the day when she shadowed the seventh graders all day they were playing a states-and-capitals game at which he did very well. Jeff explained:

> Well, a couple weeks before that we had a states-and-capitals test, and I studied hard for that, and I got them all right and then that just came easy for me. (JEFF INT 5-31-85)

Even though Jeff got <u>D's</u> in science, his science grade equivalent on the WJ-PEB was 9.7, placing him at the 70th percentile on this nationally-normed instrument. He attained 20 of 28 mathematics objectives and 20 of the 23

reading objectives on the MEAP. His overall academic grade was D for the year. With the exception of some of the special education students, only one other student did as poorly as Jeff with respect to grades. Jeff received support in the Chapter I reading program throughout many of the elementary grades but still read significantly below grade level when he entered junior high school.

In a telephone conversation with the researcher, Jeff's mother shared the fact that she herself had not been a successful reader as a child. She expressed concern about how to go about helping Jeff develop better study habits and skills. She gratefully accepted some materials from the Intermediate School District's Instructional Materials Center designed to improve study skills.

Even though Jeff's academic progress was less than satisfactory, he had apparently been making progress in his social adjustment, as the following excerpt from the researcher's fieldnotes indicates:

> She [Jeff's mother] said I made her day when I told her he was a well-behaved, "neat" kid who has good skills in getting along with adults. She said she used to get calls very often from the school because he was in some kind of trouble. She said she probably got calls on the average of every two weeks as late as last year. (FN 5-8-85)

Mainstreamed Students

Although the researcher is a special educator, she determined at the outset that this was not to be a special education study. As classroom observations progressed, however, it became apparent that Mrs. Randall's classroom

was considerably influenced by the presence of mainstreamed students, and therefore, that the effects of mainstreaming on the class should be reported. In order to prepare for this, some background information is included at this point.

Danny, Doug, and Shawn were the three handicapped students in Mrs. Randall's class. Danny and Shawn are learning disabled, and Doug is emotionally impaired. Each of the three was programmed into the special education junior high-high school resource room during part of the day, with the rest of his day spent in regular education classes.

Danny has a history of learning problems associated with hyperactivity. Medication for this condition has been judged to be quite effective in the past. Throughout his seventh-grade year, however, there was much evaluation of and adjustment in his medication. This may have been necessitated by either the rapid body changes accompanying puberty or the program changes involved in going from a self-contained sixth grade to a departmentalized seventh grade. This researcher suspects both factors combined to make it an especially difficult time for him. There were extreme fluctuations from day to day in Danny's behavior and cognitive functioning.

Over the years individualized test scores have consistently found Doug to have average cognitive abilities and achievement levels; yet his school adjustment was extremely troubled from the beginning. Many attempts have been made to motivate Doug to perform in school. The

results have been frustrating -- to the people in school, to his parents, and perhaps most of all, to Doug himself. Doug was repeating seventh grade the year of the study.

Shawn is essentially a nonreader. Although reading instruction continues for him, his program also focuses on the development of techniques for compensating for his disability. In addition to, or possibly because of, his trouble with reading and reading-related activities, he is often socially inappropriate and emotionally unstable. There are signs that he is making social and emotional gains, but he still has a long way to go.

Shawn was in the other seventh-grade science section the first few weeks of school when Mrs. Randall taught both sections. When her schedule was changed, his was too. This is an indication that the principal and the special education teacher consider Mrs. Randall to be a more appropriate teacher for handicapped students than the other science teacher. (One other handicapped student did remain in the other section. Like Shawn, he is categorized as learning disabled; but he does not display social adjustment problems to the degree that Shawn does.)

There were 28 distinct personalities in Mrs. Randall's science class; although only four representative profiles of the "normal" students and cursory descriptions of the three handicapped students are given here, it is hoped that they will provide for a recognition of the uniqueness of each student in the class.

Attention is now directed to Chapter Five for an accounting of how those personalities blended/interacted in Mrs. Randall's classroom.

CHAPTER FIVE: THE CONTEXT OF TEACHING AND LEARNING

Effective Teaching

Mrs. Randall's classroom was chosen over several potential sites as the one in which to study early adolescent learning partly because she and the researcher shared an interest in student study skills and a concern with regard to inadequate study skills on the part of some students. An important additional factor in the decision to approach Mrs. Randall with a request to study her classroom was the researcher's feeling that Mrs. Randall would prove to be a competent teacher (even though her teaching had not been observed firsthand) who would not feel threatened by having someone study her classroom.

The choice was a fortunate one: Not only did Mrs. Randall welcome the researcher into her classroom but the observations which ensued yielded much descriptive data on teaching practices identified in the literature (see Chapter Two) as effective teaching.

The following account of how Mrs. Randall conducted her class is a description of how one teacher "effectively" instructed her seventh-grade students. It is arranged under subheadings taken from the following summary of the characteristics of effective classrooms in Ward,

Mergendoller, and Mitman (1982) based on their review of studies by Emmer and Evertson (1980); Worsham and Evertson (1980); and Rounds, Ward, Mergendoller, and Tikunoff (1982):

> The findings on patterns of more and less effective teaching in junior high school do not really challenge the instructional framework that was discussed earlier -- undifferentiated assignments and periods filled by teacher recitation, discussion, and seatwork [emphasis added]. Instead, it appears that, within this basic framework, teachers display a range of specific managerial and instructional behaviors whereby some teachers seem to encourage students' progress while others appear to discourage it. These individual differences among teachers often can be quite striking. In general, the more effective teachers get students prepared for instruction with a workable set of rules and procedures, communicate information and assignment expectations clearly, make students accountable for frequent assignments, monitor students during work, and provide help and feedback on a regular basis [emphasis added]. (p. 39)

The instructional framework will be described first, followed by examples of the way Mrs. Randall taught her students within that framework.

Undifferentiated assignments

Mrs. Randall's primary goal as a seventh-grade science teacher was to instill within her students as much knowledge about the material in the seventh-grade science curriculum as possible. The curriculum consisted of the material of the science text and of supplemental and current science information. Another teacher goal was to guide her students in the development of study skills. She viewed the grades the students earned as an indication of the degree of success she, as well as they, achieved in the attainment of

both of these goals.

The requirements of Mrs. Randall's classroom were essentially the same for all students regardless of prior knowledge and ability. Some allowances were made for individual differences, however.

The special education students received resource room assistance to aid them in meeting the classroom requirements. The resource room teacher provided all three of the mainstreamed boys with outlines of the chapters to assist them in organizing and understanding the material. In addition, Shawn was allowed to take quizzes and tests to the resource room for help in reading them.

Mrs. Randall considered individual differences by providing a variety of opportunities for her students to receive credit for working with the subject matter. More specifically, she gave grades for homework assignments as well as for quizzes and tests. This was different from her counterpart in the other section of seventh-grade science who assigned grades based on student performance on quizzes and tests. Mrs. Randall explained her grading methods to the researcher as follows:

> Well, grades to me -- I was talking to one of the other teachers just now about how much weight to put on homework, how much weight to put on quizzes, how much weight to put on tests. You know when you work with numbers, a little fluctuation here and there can make a difference in the final grade....I am always wondering in the back of my mind: "Am I being fair?"....I'm always thinking and rethinking my method of giving grades. I go with the standard scale: ninety, 8Ø, 7Ø, 6Ø...I used to go...just straight -- homework, quizzes, tests; throw them all in the same pot; [and arrive at] total points. And

> whatever a student has, divide it out, and that's the percent. But then what I found: I give a lot of homework...so I end up with maybe 40% of the grade being homework grade. And then I thought: "Well, that's not real fair because lots of students get lots of help on their homework...so therefore, maybe they really don't know the material but yet they're getting a passing grade."...So I went back and last year [the year of the study] I went: twenty-five for homework, 25 for quizzes, and 50 for tests. This year [1985-1986] -- since that locks me in to that, [and] I don't always give a whole lot of quizzes (twenty-five percent on your quizzes; you blow a couple of quizzes, you are done for) -- So now I've gone: seventy-five, tests and quizzes; 25, homework. (SR INT 9-17-85)

The researcher/interviewer suggested that Mrs. Randall was trying to have her grades reflect "predominantly" what the students knew/learned about the subject but "somewhat" how hard they had worked, to which Mrs. Randall replied:

> Yes, some effort. Right....I think we figured out that a student can get 50% on tests and quizzes but do all the homework and pass the class. So you know, half the knowledge but he does his homework -- puts the effort into it -- so therefore, he'll pass the course. (SR INT 9-17-85)

Mrs. Randall wanted a good grade to be the measure of a successful seventh-grade science student. She felt it should be an indication that the student had worked hard with the material and had learned it well. However, she recognized that there were students who put forth considerable effort but did not meet with comparable success and others who mastered the material with relatively little effort. She felt sorry for and frustrated about the hardworking, but unsuccessful student and wanted to reinforce his/her effort even when it yielded unsatisfactory results in terms of knowledge gained. She enjoyed the able,

industrious student but, as shown by the following fieldnotes, termed the student as "lazy" who did not do all, or at least most, of his/her homework assignments:

> Mrs. Randall: Friday is the end of the marking period. The class average in this class at this point is 72% which is a C. There will be two quizzes yet this week. They will total 35 points. There are some people who are between two grades. I think it is important that you know that. Some of you have improved a great deal this term. I think it would be helpful to you to know what your percentage is. You should at least have twenty points on homework. I would label someone who does not do that on their homework as lazy. Do you agree? You agree and hope it is not you, right? Quizzes and tests are different. (She made some reference to differing abilities and/or situations which could justifiably cause some to do less well on these.) (FN 3-26-85)

Mrs. Randall gave a variety of kinds of assignments. The more routine homework assignments were based on the textbook. In general, for each chapter the students were expected to read the textbook material, do the vocabulary words listed at the end of the chapter (approximately twenty words which they were to look up in the glossary and for which they were to copy the definitions), do selected problems posed throughout the chapter, and write answers to the study questions (true and false, multiple choice, completion, and "How and Why") at the end of the chapter. Sometimes the "blue margin questions" (questions appearing in the margins of the text in blue print) were also assigned as homework. In addition, Mrs. Randall sometimes supplemented the textbook material with worksheets to be completed by the students. Figure 6 contains Mrs. Randall's lesson plans for Chapter 16 (on

animals) to illustrate how these various assignments were distributed throughout a chapter/unit of study. (NOTE: In order to provide a description of one unit of study, many of the examples used will be based on Chapter 16.)

Periods filled by teacher recitation, discussion, and seatwork

The seventh-grade science textbook is Principles of Science -- Book One (Heimler & Neal, 1979a). Mrs. Randall told her students at the beginning of the year that it is a good text. It has six units: Science, Matter, and Energy; Mechanics; The Earth; Living Things; Ecology; and Conservation. There are 23 chapters. Mrs. Randall omitted the following ones (largely because there was not enough time to cover the entire book in the manner in which she wanted it covered): Heredity; Biomes; Descent and Change; Soil, Water, and Air Conservation; and Forest and Wildlife Conservation.

The eighth-grade science classes use the other book in the set, Principles of Science -- Book Two (Heimler & Neal, 1979b). Its units are: Human Biology; Reproduction and Body Maintenance; Astronomy; Chemistry; Energy; and Human Ecology.

These seventh- and eighth-grade science classes comprise the school's general science offerings as there is no general science course in high school. At that level the college preparatory students take physical science and biology and the others take a life science course.

Day/Date	Lesson Plans
Thurs. 4-18-85	Assign: Chapter 16 Vocabulary Words
Fri. 4-19-85	TV program abou computers
Mon. 4-22-85	Collect and go ove Vocabulary Words
Tues. 4-23-85	Discuss: 16.2 Earthworm: Digestive System 16.3 Earthworm: Circulatory System
Wed. 4-24-85	Vocabulary Quiz Discuss: 16.4 Earthworm: Nervous System 16.5 Earthworm: Reproductive System Assign: Diagram* [label earthworm parts]
Thurs. 4-25-85	Earthworm Dissection Assign: Worksheet* on Earthworm
Fri. 4-26-85	Quiz on 16.1-16.5 [earthworm] Rest of "Discover" program [TV]
Mon. 4-29-85	NO CLASS: ASSEMBLY PROGRAM
Tues. 4-30-85	Go over Quiz on Earthworm Discuss: 16.6 The Grasshopper 16.7 Grasshopper: Digestive and Circulatory Systems Filmstrip, "Insects Infinitum" (20 min.)
Wed. 5-1-85	Discuss: 16.8 Grasshopper: Respiratory and Nervous Systems 16.9 Grasshopper: Reproductive System Filmstrip, "Insects -- Life Cycles"
Thurs. 5-2-85	Review Grasshopper Worksheet. Grasshopper Problems 3-5 Puzzle?? Discuss: 16.10 The Frog Assign: Study for Quiz
Fri. 5-3-85	Quiz on Grasshopper TV Program, "Newton's Apple"
Mon. 5-6-85	Go over Grasshopper Quiz Discuss: 16.11 Frog: Respiratory and Digestive Systems 16.12 Frog: Circulatory and Excretory Systems Assign: Work on Study Questions
Tues. 5-7-85	Discuss: 16.13 Frog: Nervous and Endocrine Systems 16.14 Frog: Reproductive System Assign: Frog Worksheet and Problems 6 and 7
Wed. 5-8-85	Go over Frog Worksheet Filmstrip, "Amphibians" Work on Study Questions Assign: Study for Frog Quiz
Thurs. 5-9-85	Review Chapter 16 Assign: Study for Chapter 16 Test
Fri. 5-10-85	Frog Quiz Assign: Blue Margin Questions Study Questions A, B, C, and D
Mon. 5-13-85	Correct Study Questions and Blue Margin Questions Assign: Study for Chapter 16 Test
Tues. 5-14-85	Chapter 16 Test (PLAN BOOK, p. 31)

*See Appendix I for diagram and worksheet.

FIGURE 6. CHAPTER 16 LESSON PLANS

Although Mrs. Randall advised the students to read the textbook material once when it was first assigned and again just before they were to take a chapter test, she routinely covered the material with the class and simultaneously guided the students in their notetaking. Besides helping to compensate for the difficulties some students experienced with the reading level of the textbook, this dual presentation helped accommodate the individual learning strengths/preferences (visual and/or auditory) of the students.

Mrs. Randall reinforced the textbook material by conducting "lecture/discussion/question-and-answer" sessions. (See Appendix C for a portion of the text of Chapter 16, a transcript of the class session when that material was covered, and the chalkboard notes developed during that time.) These sessions were, first of all, lectures by the teacher reiterating the information contained in the textbook. She frequently gave more information about a subject than the text provided, sometimes pointing out that they were not to be held accountable for the additional material. As she lectured, she wrote notes on the board, thus modeling notetaking for the students. Interwoven with the lectures were exchanges (discussions and questions and answers) with the students for the purposes of monitoring student understanding and of maintaining student attention.

There were many related activities which served to reinforce and/or extend the science lessons. The more

frequent ones are mentioned/explained here as each was an integral part of Mrs. Randall's teaching and, therefore, a necessary component in this description of the classroom context.

Science experiments were conducted in two distinctly different ways in the classroom. There were those which were mainly teacher demonstrations and those in which all the students actively participated. Early in the year Mrs. Randall explained the scientific method by conducting an experiment on what happens to air when it is heated. The following fieldnotes show how she developed her lesson:

> Mrs. Randall asked if someone would like to make a hypothesis about what happens to air when it is heated.
>
> Student: It expands.
>
> Another student: The molecules move faster.
>
> Mrs. Randall wrote on the board as the experiment/lesson progressed:
>
> 1:3 Experiments
>
> 1. Problem
>
> What happens to air when it is heated?
>
> 2. Hypotheses
>
> When air is heated, it expands!
>
> When air is heated, molecules move faster.
>
> 3. Procedure
>
> 4. Observation
>
> 5. Conclusion

Mrs. Randall led the class in a discussion of why they could not test the second hypothesis: Molecules are not observable with the available equipment.

She informed the class that she had not prepared a control setup for the experiment to prove that nothing happens when heat is not applied but that such a setup would ordinarily be a part of an experiment of this nature.

She talked about the senses: In a lab situation one uses all the senses except the sense of taste, which is not to be used for reasons of safety.

She lit the alcohol burner. She placed it under a flask with a balloon covering the opening in the top. After a short time the flask began to fog up. All of a sudden the balloon popped straight up.

Mrs. Randall: Put down your observations. We will be able to draw conclusions based on these observations. We can back up these conclusions with evidence -- your observations. They concluded that the air did expand when heat was applied....

On Board:

2 groups

(1) experimental group
(2) control group

variable -- condition that is different from the control

Mrs. Randall asked the students what the variable was in the experiment they just observed. A student identified the variable as heat.

She then posed the question: What happens when I take the heat away?

She proceeded to remove the heat....

On Board:

1.4 Theory and Law

<u>theory</u> -- a statement that best explains observations about an event or occurrence.

> law -- a theory that doesn't change through many years of testing.
>
> The students were very attentive and appeared to be writing in their notebooks appropriately....
>
> [The discussion proceeded to the next topic in the book.]
>
> Student (later): The balloon fell over....
>
> (The balloon was back to its original state by the end of the hour.) (FN 9-7-84)

Mrs. Randall had mixed emotions about "lab days" when all the students were involved in conducting science experiments. She personally enjoyed this kind of activity and recognized the value of "hands-on" experiences for students. She was well aware, however, that supervision and classroom control were a special challenge when the students were moving about the room in a less structured situation. One such activity was observed in mid-April, on a day when Doug and Danny were especially trying:

> I entered the classroom and sat down. Doug came in and hit Danny real hard on the buttocks as he passed. Danny had been sprawled across his table with his knees on his chair. IT APPEARED THAT THE TEMPTATION HAD BEEN TOO MUCH FOR IMPULSIVE DOUG.
>
> Mrs. Randall entered the classroom. The bell rang.
>
> Mrs. Randall: We have a lot to get accomplished. Turn to p. 326, the bottom of the page....
>
> ACTIVITY:
>
> THE GERMINATION OF SEEDS IN DIFFERENT ENVIRONMENTS. Soak eighteen bean seeds in water overnight. This will soften the hard coat that covers each one. The next day, place one bean and a piece of blotter in each of eighteen test tubes. Press the seed between the blotter and wall of the test tube.

> In nine of the tubes, moisten the blotters with water. Close the test tubes with rubber stoppers. Arrange the eighteen tubes in six groups -- three groups with wet blotters and three groups with dry blotters. Place Group I (three dry tubes) and Group II (three wet tubes) under an electric lamp; Group III and Group IV in a cold, dark refrigerator; Group V and Group VI in a warm, dark drawer. What happens to each group of seeds? How many seeds in each group germinated? Record your results in a table similar to Table 15-1. (Heimler & Neal, 1979a, p. 326)

Mrs. Randall said that the beans had been soaked.

After a student complained about something Danny had said, Mrs. Randall told Danny to be quiet. She said: If you can't say something nice, don't say anything.

Doug: We did this last year. (Doug was repeating 7th grade.)

Mrs. Randall: No, we didn't. I don't remember doing it last year.

The students were restless and excited about the prospect of doing this experiment.

Mrs. Randall: You like to do activities, right? I do too, but I do not like chaos.

Mrs. Randall indicated that the students would be working in teams for this activity.

Doug: There are only two people in this class I would do this with.

Mrs. Randall called attention to the directions and picture on p. 326 of the textbook (see above).

There was some talk a couple of times between a few students about a fight that took place yesterday. Jeff asked Doug about it.

Mrs. Randall: Doug, be civil back there, okay?

Doug: I am.

Someone at each table was given a tube, bean, and blotter (paper towel).

The students were noisy. There was quite a bit of unproductive out-of-seat activity.

Mrs. Randall: Doug, show the rest of the kids how that is. That is the way it should be. (Doug had the bean in the tube.)

Helen prepared hers and remarked: I am very scientific.

Mrs. Randall: All right, may I have your attention again, please? Will you settle down, please? All right, I am not going to tell you everything to do. This is a lab. You are to do some of the thinking on your own.

She put on the board (as she explained):

(1) Problem

Will seeds germinate in different environments?

Guess -- Seeds will germinate in a warm, moist environment.

Mrs. Randall: You should be writing some of this down. This is not just a play hour.

On Board (continued):

(2) Procedure:

a) 18 test tubes, put bean seeds in them with paper towels

Doug said they would germinate between the folds of a washcloth with a lamp over the top.

Mrs. Randall designated half of the teams to moisten their towels.

On board (continued):

b) Moisten 9 blotters rubber stopper

18

wet	dry
9	9

(1) (2) (3) (4) (5) (6)

(3) Observations

> Mrs. Randall wheeled out from the storage room a big, dusty shelved apparatus with lights above the shelves.
>
> Mrs. Randall: Put your initials on your tube.
>
> Helen was determined that her name, not Lyn's, would be put on their tube. Lyn did not object.
>
> Mrs. Randall instructed that three wet and three dry tubes be placed under the lights....The second group of tubes (three wet and three dry) were placed in cold storage in the storage room off the classroom.
>
> The rest of the tubes were placed in a drawer in the classroom. Because there were not six tubes brought to be placed in the drawer, Mrs. Randall asked where the missing tube was. Doug grinned and produced the tube. He said he had held his back because he wanted to put it where it would grow. He said he knew it would die in the drawer.
>
> Mrs. Randall said that they would make observations next week. She instructed them to prepare a chart like the one on p. 327 on which to record their observations.
>
> Mrs. Randall: That, besides the vocabulary terms, is your homework for Monday. Thank you for your cooperation with the lab. It worked real well. I HADN'T THOUGHT SHE WOULD FEEL THAT THEY HAD BEEN REAL COOPERATIVE. IN RETROSPECT, THEY WERE COOPERATIVE INSOFAR AS PARTICIPATING IN THE LAB WAS CONCERNED, BUT THEY WERE NOISY. (FN 4-19-85)

Most of the assigned homework was taken from the textbook. This work was generally checked in class, reinforcing the learning that occurred as a result of doing the assignment. The vocabulary terms serve as an example. The students were required to look up the vocabulary words for each chapter in the glossary of their text and to copy down the definitions. The following vignette from the fieldnotes documents how the study of the vocabulary words was extended into the classroom:

> Mrs. Randall pronounced each vocabulary word and then called on someone to read the definition he/she had written for that word. She generally called on someone who had raised a hand indicating a willingness to read his/her definition for that particular word.
>
> She asked related questions after most of the definitions....
>
> When it appeared that a few of the students were doing all of the volunteering, she pointed out that most of the questions and answers seemed to be coming from the side of the room near the hall. Mrs. Randall: They seem to be sharper today. How about this side (near the window)? Doug?
>
> Doug did not give the answer. However, the students on the side near the window appeared to perk up and volunteered questions and answers more often....
>
> Mrs. Randall (when the checking was completed): Hand your papers in. (FN 1-4-85)

The students were frequently quizzed on the vocabulary words also. (See Appendix J for a copy of a vocabulary quiz.)

Besides the textbook-based materials, Mrs. Randall used many supplemental materials to vary or to enhance her presentations. She frequently used a video cassette recorder to record a television program aired on an area educational television station so that she could show it to the class. Such programs often provided current scientific news or interesting information not available in the textbook:

> Mrs. Randall: Sit quietly so I can get the program started so we can watch "Newton's Apple."
>
> There was some shifting of seats in order to see the TV set better.
>
> Mrs. Randall used the fast forward on the machine to quickly scan the film to find the place where they could resume watching a program they had begun viewing on a previous day. There were

> astronauts moving around in weightlessness making orange juice, and the students laughed as they watched that activity speeded up. Mrs. Randall went past the spot they were looking for and had to back up.
>
> It was a very interesting and current program. It featured shuttle flight number twelve of orbiter Discovery in June of 1984. Jeff Hoffman, an astronaut who is scheduled to fly into outer space early this year, talked on the film. I was fascinated as were the students. This was sponsored by the National Education Association.
>
> "Newton's Apple" had been the next program taped so there was no delay. "Newton's Apple" featured a question sent in by a listener: "Why can dancers, acrobats, etc. spin without getting dizzy when most of us can't?" The show was very well done. It lasted fifteen minutes. The entire class appeared to be engaged the whole time. Later Mrs. Randall told me that she would like to have her class see this show once a week or so. (FN 1-18-85)

Mrs. Randall also ordered a variety of films and filmstrips from REMC (Regional Educational Media Center) for use in her classroom. During the first week of school she showed a film on how to study science; she had ordered it in the spring before school was out. REMC films must be ordered approximately a month ahead of time. This can pose a problem as it is not always possible to predict exactly when the film will arrive or be needed:

> Mrs. Randall: Any other questions before we have our film on protozoans? It goes with the next chapter but came in a little early so we have to show it and send it back. (FN 3-1-85)

Throughout the year the class viewed several science filmstrips. Many of these were put out by the National Geographic Society, were owned by the school, and were, therefore, more easily scheduled than were the films that had to be ordered.

Other supplemental materials came from many sources: There were crossword puzzle pages taken from a life science book, pictures of fossils which Mrs. Randall had collected, weather maps from a newspaper, rock samples and pamphlets from Isle Royale, and many, many more. Some were brought in by Mrs. Randall, others by the students.

Mrs. Randall recognized the motivational value in making the study of science relevant and current for her students. She availed herself of opportunities to guide the students in applying what they were studying. For example, fieldnotes for January and February show that the students recorded the barometric pressure readings for several days and then charted them:

> Mrs. Randall: Jot down what the barometer reading is at 10:23 on January 23rd. We will check whether it has changed tomorrow.
>
> The reading was 29.35. She moved the red marker on the barometer to that point so that they could detect movement. (FN 1-22-85)
>
> Rob and Johnny checked the barometer when they came in. They said nothing to indicate whether this was an example of voluntarily applying learning from this class or whether they were carrying out an assignment....
>
> Mrs. Randall looked at the barometer, read 29.68, and wrote it on the board....
>
> Bill spoke of the barometer reading in connection with the fact that it was starting to snow outside. (FN 2-5-85)
>
> I entered the classroom soon after the first hour dismissal bell rang. Brad was standing in my seat reading the barometer. There was about two feet of snow up against the window beside where I sit. Some schools closed today because of the weather....

> Mrs. Randall gave the barometer reading, 29.48. She remarked that it had dropped from yesterday. Mrs. Randall: Temperature up; more pleasant. Front going through. Wind and temperature changed. (FN 2-12-85)
>
> Mrs. Randall read the barometer and put the reading on the board, 29.49. (FN 2-15-85)
>
> Mrs. Randall took the barometer reading and wrote it on the board, 29.49. (FN 2-19-85)
>
> A student reminded her to take the barometer reading. She did and wrote 29.43 on the board. She said this was the last day to take this, that next week they would graph it. (FN 2-22-85)

She also frequently discussed current scientific events with them:

> She digressed a minute to ask what was happening today that would be written down in history. A student said that the space shuttle was scheduled to land. There followed a short discussion on the problem encountered yesterday with the shuttle and about how it was solved. Mrs. Randall told the students about how new and exciting space travel was 25 years ago. (FN 9-5-84)

In summary, Mrs. Randall provided her class with a variety of activities, ranging from lecture/discussion/question-and-answer sessions, laboratory experiments, and work with study materials (all based on the textbook) to supplemental and extended information such as audiovisual presentations and involvement with relevant/current scientific topics and materials initiated either by the students or herself.

The foregoing description of the basic framework of the seventh-grade science class is followed by an account of how Mrs. Randall managed the instructional activities within that framework.

Get students prepared for instruction with a workable set of rules and procedures

Mrs. Randall's organizational skills were apparent in the way she conducted the science class. There was very little time wasted. The students were expected to be seated and ready for class when the bell rang. As a rule she began class immediately thereafter with a statement which oriented them to prepare for the first activity, as illustrated by the fieldnotes for the beginning of class on three different occasions:

> Mrs. Randall (when the bell rang): Okay, we are going to have a test today over Chapter 1. First, we will go over the "How and Why" questions.
>
> She went over the questions, with the students giving the answers which they already had written down. It must have been last night's homework. The students raised their hands when she asked each question. She often asked follow-up questions to enlarge upon or clarify a topic. (FN 9-18-84)
>
> Doug was standing near where I was sitting. He was apparently waiting for the teacher. She came in just before the bell rang; he talked to her, got a slip signed -- or something -- and went to his seat.
>
> Mrs. Randall took roll and began the lesson simultaneously. Only Gerry was absent. (FN 1-22-85)
>
> School was back in session after two days off due to a storm. Mrs. Randall (walking in as the bell rang): We are having a test today. You have had two days off. You would have had a test on Wednesday. There should be a lot of A papers today. You have had two extra days to study. (FN 2-15-85)

Usually before beginning the first activity (but sometimes later in the period), Mrs. Randall talked about what the class would be doing the rest of the period and

reviewed the assignments and activities for the next several days. (On Mondays, when the researcher was not present, she usually listed the week's assignments on the board.) The transcript which follows illustrates how this was done:

> Mrs. Randall: Now before we begin our talk/discussion, let me remind you of a few items for this week. First of all, today we are going to talk about two sections. We will talk about the earthworm's digestive system and the earthworm's circulatory system. Tomorrow...we will have a vocabulary quiz over the definitions I gave out to you. There will be twenty questions on it. There will be definitions. The words will be listed so it will be of the matching type. But it will be a quiz under your quiz scores, and it's worth twenty points. So please study tonight, not just in study hall today. That's not enough. Tonight at home. Take your vocabulary list home with you. You don't even need to take your book home. Just take your vocabulary list home and study the words. All right, so that's tomorrow -- a quiz.
>
> Tomorrow also we will continue our discussion of the earthworm. We will do 16.4, the earthworm's nervous system, and 16.5, the earthworm's reproductive system. Tomorrow also, I probably am going to do a demonstration on the dissection of an earthworm. So we will look at the various -- We will look at it externally and then we will slice it down the center -- I will -- with a scalpel, and we will look at the internal organs that make up the earthworm. But in order to know what the internal organs are, we have to review the material first, then do the dissection, so the dissection means something to you.
>
> Then on Thursday of this week we are going to do a worksheet on the earthworm as a review. We will spend Thursday reviewing the first five sections, and we will not go any further than that because on Friday we are going to have a quiz on the earthworms. So, two quizzes this week. One on Wednesday, tomorrow, on vocabulary and one on Friday. The one on Friday is going to cover 16.1 through 16.5 on the earthworm. And it will be a twenty-point quiz.
>
> Also on Friday then, we will continue looking at the program that we started looking at last Friday, called "Discover." We didn't get too far

into it with the technical difficulties that your teacher was again having. I'm illiterate when it comes to some of these VCRs. But we will continue with that program, and I think we'll probably see the rest of it. There are three other segments connected with it, and they're all real good. So we'll see that then on Friday. So you can look forward to that.

Friday night then, as far as I can see at this point, there will not be an assignment, unless you want to take your book home and work on the study questions which is always an ongoing assignment when we are on any particular chapter. Any questions? Shawn?

Shawn: When are we going to see that movie on (unintelligible)?

Mrs. Randall: That will be on Friday. That's part of the "Discover" program on Friday after the quiz. Any other questions? (TRANS 4-23-85)

There were usually two to four activities planned for each class period; as a rule transitions were made smoothly and efficiently:

Mrs. Randall: Friday we will see a TV program called "Discover" that Mrs. Burton has taped for us. "Newton's Apple" is no longer being shown. It will start up again in March.

They then began the vocabulary words from p. 284 of the text. Mrs. Randall gave the word and called on a student to read his definition. The students raised their hands to volunteer. Mrs. Randall enlarged upon or reiterated many of the definitions.

Mrs. Randall: Who has not answered one yet? Put your hand down if you have answered one. Barbara....

Mrs. Randall (when the checking was finished): Pass your papers in. Move back to p. 271. This is a new unit....

Mrs. Randall: If you have looked through the chapter -- and you should have -- you will note that in this chapter you will gain an understanding of the main features of living organisms and how they are classified.

> Mrs. Randall: Let's take five minutes right now to list organisms, any living thing. Let's try to stick to the Pine Forest area. (FN 2-19-85)

Class generally continued right up until the dismissal bell rang and occasionally a little longer, as Mrs. Randall's rule was that class was not over until she dismissed the students. This rule was especially appropriate because the day's announcements were given a few minutes before the end of the hour each day making it difficult to predict just how much instructional time was still available. Had the students not been routinely required to remain in their seats until dismissed by the teacher, Mrs. Randall may have had difficulty regaining their attention after the announcements in order to complete the day's agenda.

Other classroom rules were also commonsense guidelines which promoted classroom efficiency and consideration for others. Mrs. Randall instructed the students to do the following:

> Wait until she excused them and push their chairs in when they did leave. (FN 9-5-84)

> Use [roll-taking time] to study rather than to talk. (FN 9-11-84)

> Be quiet [when you finish your test]; some kids will need the whole hour. (FN 12-7-84)

> Raise your hand if you have a question. (FN 2-1-85)

> [Attend to class activities.] (Mrs. Randall: Put the magazine away, Doug.) (FN 3-19-85)

> Don't touch things [experiment setups] in the room that belong to other classes. (FN 3-22-85)

> Leave each other's property [Danny's books] alone. (TRANS 4-30-85)

> Check your own paper...as I go through the answers. Be honest about it....Don't be writing the answers down; just check it right or wrong as I go through the answers. (TRANS 5-7-85)

> Make sure you keep your answers covered. You know, keep running your test over the top of your answer sheet. We don't want to tempt anybody. Keep your eyes on your own paper. (TRANS 5-14-85)

The students knew the rules and the reasons for them. Most of them also sensed when and how strictly they must be adhered to. The rules were enforced somewhat selectively based on the reason underlying a particular rule. For instance, it was a rule that they were to be sitting quietly in their seats when the bell signalling the beginning of the hour rang. Mrs. Randall did not appear to mind quiet talking as she was taking roll; but when she was ready to start class, she did mind having to spend time directing their attention to the task at hand:

> Mrs. Randall began by chastising the group for not being in their seats ready to begin class when the bell rang. She said too many of them are habitually at her desk at the beginning of the hour preventing her from getting class started promptly as she should. She said needing to sharpen a pencil is not a valid excuse as that should be done before the bell rings. In short, the rule is that a student is technically tardy if he is not seated ready to begin class when the bell rings. According to Mrs. Randall this class has been especially disregardful of this requirement lately. (FN 12-11-84)

Mentioning this was apparently effective. A week later the students were very aware of the need to be settled when the bell rang:

> I hadn't noticed that Mrs. Randall had entered the room, but it became obvious that the students were

> hurrying to get seated before the bell rang. They must be taking seriously the expectations she spelled out for them last Tuesday. (FN 12-18-84)

The rules were there to be put into force when the situation deemed it necessary. If one considers the evolution of discipline from being external (imposed) in the case of the young child to internal (coming from self) in the mature adult, then the idea of rules to be enforced as needed for the emerging adolescent need not be considered inconsistent.

Fieldnotes provide documentation that the consequences of not following the rules, when they should have been followed, were generally appropriate to the offense:

> Mrs. Randall: Chapter 18. Take out your worksheet to check the first two pages. If you do not have them with you, you are out of luck; you are not going to your locker.
>
> She began calling on the students in order. Three of the first six had left their papers in their lockers....
>
> Whenever Mrs. Randall found that a student did not have his paper, she put a Ø in her gradebook for him/her. (FN 1-8-85)
>
> Brad asked to turn in his vocabulary words. They had been due yesterday. Mrs. Randall told him that he was too late. (FN 2-5-85)
>
> Mrs. Randall: We will do more of these (lab activities) depending on how this goes. Anyone who is fooling around will be asked to leave the classroom....
>
> Danny had one leg up on the counter. He playfully grabbed his lab partner, Allan, by the hair....
>
> Mrs. Randall: Danny, pay attention. The water is up here I want you to use. They won't be too happy if you use that....

> Mrs. Randall told Danny she had had bad reports on him and that he messed the whole group up. She said next time he would not be allowed to participate. (FN 2-22-85)
>
> Mrs. Randall caught Doug throwing a paperwad and told him to pick it up. (FN 4-16-85)

Many class hours passed with no discord at all. Mrs. Randall was very aware of the potential for troublesome student behaviors that negatively influence the learning environment. Many of her management techniques prevented discipline problems. For example, she determined where the students would sit. In most cases there were a boy and a girl at each table. This resulted in less student-to-student communication and horseplay -- and possibly cheating -- than would have been the case had friends been allowed to sit together and, therefore, to attend to cultivating friendships at the expense of the academic atmosphere. This same technique prevented possible off-task behavior during the roll-taking process as absences could be quickly determined by checking the empty seats. The already-mentioned rule that students were to wait for her to dismiss them rather than to leave when the bell rang enabled her to be in control to the end of the class period.

In short, Mrs. Randall had good classroom control by virtue of her well thought-out rules and procedures.

Communicate information and assignment expectations clearly

Because one cannot capture the nuances of communication in a written record of the words spoken, the transcripts included in this report are insufficient

documentation of the degree of communicative effectiveness in the classroom. The researcher witnessed many hours of teacher-student communication during the observation phase of the study. She judged it to be effective communication for several reasons. One was simply that Mrs. Randall was heard by all. Even though soft-spoken in a one-to-one situation, Mrs. Randall projects her voice well when speaking before a group. There was no evidence to suggest that even Allan, who had a hearing problem, failed to hear any of what the teacher said.

Other reasons that Mrs. Randall's communication was judged effective had to do with the fact that she is expressive and easy/interesting to listen to. Her students were generally attentive when she was teaching. She reinforced the spoken word with notations on the chalkboard. She allowed and encouraged questions. The following vignette (from the fieldnotes) illustrates how she gave everyday examples to help her students understand difficult concepts:

> She led a discussion on classification, developing as an example a classification scheme for the 612 students who attend the Pine Forest schools, breaking them down first into grades, then sections, then classes, then alphabetizing their names, grouping according to skills, etc....
>
> In continuing to introduce classification, Mrs. Randall used the telephone book as an example of classification. The students initially thought she meant the alphabetical listing of names in each city/town/area. She said she also meant the yellow pages and went on to discuss how their arrangement is determined.
>
> Helen asked how students were divided into the two sections of seventh (or any) grade. Mrs. Randall

(joking): Very carefully. We look at each of you very carefully to see how you will fit into a group.

Doug: Then why am I in this group?

Mrs. Randall replied that she didn't know. This exchange was all in fun. Mrs. Randall then said that she didn't know how Mr. Wilson (guidance counselor) decided who would be in which section. (FN 3-1-85)

Make students accountable for frequent assignments

Mrs. Randall had her students actively involved with the subject matter to be taught/learned. They read the textbook; worked with the vocabulary words; listened to lectures; discussed the material; asked questions and answered questions; observed and conducted experiments; viewed films, filmstrips, and television shows; contributed resource materials, and so forth.

Although Mrs. Randall wanted student grades to reflect learning, she believed student performance on daily assignments to be a measure of the learning process which should be included -- along with quiz and test scores -- in their grades. (As explained earlier in this chapter, the students' grades were based on performance on homework [25%], quizzes [25%], and tests [50%]. For the unit covering Chapter 16 of the science textbook, grades were assigned to the following:

Homework

Vocabulary words, Chapter 16
Puzzle, Earthworm
Worksheet, Grasshoppers
Puzzle, Grasshoppers
Worksheet, Filmstrip
Study Questions
Blue Margin Questions

Tests and Quizzes

Vocabulary Quiz
16.1-16.5 Quiz
16.6-16.10 Quiz
16.11-16.14 Quiz

Chapter 16 (Animals) Test

Monitor students during work

Mrs. Randall employed several strategies for monitoring student progress. One was to ask questions as an integral part of the lecture/discussion/question-and-answer sessions described earlier in this chapter. The students were expected to have read the material before it was discussed in class. Mrs. Randall checked student understanding as she went over the material in class as shown in the following transcript:

> Mrs. Randall: Now this diagram -- Let's see, which one does it correspond to on your handout sheet? -- (Student responses.) The bottom one, right? Right here is -- So you might want to label that. Label this one up here, physical features. This one down here then, you would label, digestive system. So the first one you have there is mouth parts. From the mouth parts we go up to -- What's the tube that leads from the mouth to the crop called? It's not labeled here, but what would we call it? Sam?
>
> Sam: Esophagus.
>
> Mrs. Randall: Esophagus, okay, would be your next part (writes). All right then, the esophagus

leads to the storage area of the digestive system. What do we call that? Four letters. Jeannine?

Jeannine: Crop.

Mrs. Randall: The crop (writes). Okay, the grasshopper also has a crop where it stores food. What comes after the crop -- where the food is ground up -- with spiney walls? Sam?

Sam: Gizzard.

Mrs. Randall: Gizzard. Okay, the fourth one would be the gizzard (writes). From the gizzard you went directly to the intestine in the earthworm. The grasshopper has one additional organ. Danny?

Danny: (Unintelligible.)

Mrs. Randall: Helen?

Helen: Stomach?

Mrs. Randall: All right, the stomach (writes). All right, so the stomach is also going to do some digesting for the grasshopper. If you look at your diagram at the top of p. 340, you will see that the stomach and the gizzard are both surrounded by a green area there, eight double sacs called digestive glands. So the grasshopper has some actual digestive glands surrounding its digestive system. These are eight double sacs that produce enzymes. And if you'll remember, enzymes are those substances which break food down for the organs. All right, after the stomach then, further digestion is going to occur. Jeff?

Jeff: Intestine.

Mrs. Randall: All right, in the intestine. What else is going to happen in the intestine? Don?

Don: Um, (unintelligible).

Mrs. Randall: All right, that's next but what else is going to happen in the intestine besides finishing digestion, what else happens: What else, Anne?

Anne: (Unintelligible.)

Mrs. Randall: All right. Food that has been digested, now is going to be absorbed into the bloodstream. (TRANS 4-30-85)

Mrs. Randall assigned homework as a means of involving students with the material and went over that homework with them in order to check their understanding of the information/concepts. In the following example (fieldnotes) she modified her teaching based on students' feedback which indicated that they had not understood the material satisfactorily:

> The rest of the period was devoted to going over a homework sheet involving metrics. The teacher put the problems on the board one by one. She asked frequently, if not for each one, for a show of hands of the students who had gotten the correct answer. It became increasingly evident that many of the students did not know how to do the work. Mrs. Randall conveyed the feeling that it was acceptable to get an incorrect answer but that it was not acceptable to not have attempted the assignment.
>
> Mrs. Randall: Before we finish today I am going through this one more time. I'm going to make this for you so that you can use it.
>
> On Board:
>
> 1 Km. = 10 hm. = 100 dam. = 1000 m.
> 1 hm. = 10 dm. = 100 m.
> 1 dam. = 10 m.
> 1 m. = 10 dm. = 100 cm. = 1000 mm.
> 1 dm. = 10 cm. = 100 mm.
> 1 cm. + 10 mm.
> 1 mm. + 1 mm.
>
> Mrs. Randall: I probably should have given that to you at the beginning of the hour instead of at the end. (FN 9-11-84)

Quizzes (see Appendix K for a sample quiz) were also a method Mrs. Randall used to assess student progress. While tests came at the end of a unit, quizzes were given throughout the unit, so she could modify her lesson plans in accordance with the feedback she got from them.

Provide help and feedback on a regular basis

Mrs. Randall guided student learning in many ways. The following vignette shows how she set the stage for the year:

> Mrs. Randall introduced the study skills film warning the students that it was an old film so the clothing and hairdos would be out of style but indicating that the information on how to study science is still current....
>
> She activated the film telling the students that it would not be necessary to take notes on it.
>
> Points made in the film:
>
> --A schedule is part of an efficient study plan.
>
> --Take effective notes.
>
> --Reading: skim, use clues (headings, topic sentences, etc.), read carefully.
>
> --Be alert for scientific meanings which may be different from a more common, everyday meaning that the word has.
>
> --Tie together ideas.
>
> --Pay attention to
>
> 1. Definitions
> 2. Facts
> 3. Concepts
> 4. Theories
>
> --Scientific Method
>
> 1. Know the problem.
> 2. Think of ways to explain.
> 3. Choose the best explanation.
> 4. Test.
>
> --Develop the habit of precision in observation and experimentation.
>
> --Be alert to science in the daily world.
>
> Mrs. Randall led the group in a discussion of the film. She talked about using the library to get

> science information. She talked about when the students can use the library.
>
> Mrs. Randall brought out the science textbooks, passed them out, told the students to flip through to be sure their books were okay and then to write their names in their books. She told them to put book covers on their books....
>
> She told the students about the arrangement of the book -- chapters, titles, sections, questions in the margin to check their understanding of the material, goal statements, experiments/activities, perspectives (information on careers and other topics), problems based on the material, main ideas, vocabulary, investigations, interesting related reading, etc.
>
> She suggested that they approach a chapter by looking at the title, flipping through the pages to look for the general ideas, and going back to the last page to read the main ideas. She told them that the numbers in the righthand column refer to the sections where the respective main ideas are explained. At the bottom of the last page are the vocabulary words. Those words appear in the text in boldface print. Definitions may be found in the glossary.
>
> She explained that this year she will require her students to write the questions as well as the answers to facilitate using the papers for study. That is, the questions and answers will become a review sheet for the chapter.
>
> Mrs. Randall concluded her textbook survey by asserting that it is a good textbook. She said they should read the material once when it is assigned and then read it again in preparation for a test. (FN 9-5-84)

Throughout the year she coached her students on how to manage the material they were to learn. An example of this is the way she guided their notetaking. The transcript in Appendix C documents the way Mrs. Randall modeled notetaking by writing on the board what the students should copy in their notes. Fieldnotes and a transcript show that later in the year she sometimes suggested

something that they should put in their notes, without writing it on the board, in order to encourage some independence/responsibility with regard to the skill:

> Mrs. Randall: I am not going to put this on the board but you should put it in your notes. (This had to do with more information on each kind of front -- cold front, steeper, etc.) (FN 2-5-85)

> Mrs. Randall: Now we're going to have quite a few notes as we go through the chapter so once again I will encourage you to go back and review the notes. I know there's one type student that says "Enough, Mrs. Randall; give me a break." But you should go back when each section is over and go through and look through your notes. Okay, first of all, let's give a definition to our digestive system, any digestive system. So let's put that up here first: (writing) digestive system. A digestive system -- and I'm not going to write this definition on the board; you can jot it in your notes -- a digestive system -- is made up -- of the group of organs -- group of organs -- which -- break food -- group of organs -- which break food -- into particles -- which break food -- into particles -- small enough -- group of organs -- which break food -- into particles -- small enough -- to be used -- to be used -- by the organism. Okay? Group of organs -- which break food -- into particles -- small enough to be used by the organism. The organism is any living thing. (TRANS 4-23-85)

> Mrs. Randall pointed out that, if they were taking notes, they might want to list the things organisms compete for. (FN 5-21-85)

> Mrs. Randall told the students they were to take notes on their own. (FN 5-28-85)

Mrs. Randall sometimes asked questions to drill the students in preparation for a chapter test. These sessions were generally intense and purposeful as shown in the following fieldnotes:

> Class began. Mrs. Randall immediately began putting formulas on the board and leading a question-and-answer session about them as a review before the test which was to come a little later in the period. Several students asked questions

> which appeared to be aimed toward clarification of a point which might appear on the test. (FN 12-7-84)
>
> There was lots of participation. Many students raised their hands volunteering to answer each question Mrs. Randall posed. It seemed apparent that the students viewed this as a drill to help them prepare for the test. (FN 2-12-85)

Fieldnotes also show that Mrs. Randall guided her students in a variety of other ways aimed at improving their academic performance:

> Mrs. Randall: Let's try to pay attention. I know it's getting late in the hour but we haven't done that much. (FN 12-4-84)
>
> Mrs. Randall: I hope you are really paying attention because this will help you with the test. This should be a tremendous help. (FN 2-15-85)
>
> Mrs. Randall: Good luck. There is one point per answer for a total of 62 points. I hope we have a lot of A's and B's and nothing lower than a C. You have the hour so use the hour. Just a little hint: Don't take time to look up every answer. That will take too long. Go through and do the ones you know first. (They were allowed to use their notes for this test and had not done so before.) (FN 12-21-84)
>
> Mrs. Randall cautioned them not to read true/false questions too deeply. She said she does sometimes too. She talked about which part of the test was most challenging. (FN 2-1-85)
>
> Mrs. Randall: Two more minutes. Quarter to is the time limit. Make some quick guesses. Don't leave it blank. You know it is wrong if you leave it blank. Put something in. (FN 2-26-85)

Another way to help students to be successful is to keep them appraised of how they are doing. Mrs. Randall was mindful of the importance of this as shown in the fieldnotes below:

> Mrs. Randall told them to clear their desk tops in preparation for the quiz she was handing out. She

told them that there were only thirteen blanks on the quiz. She said it was a ten-point quiz and that meant that they could possibly earn three bonus points....She went on to say that progress reports will go out the first of next week. SHE MAY WANT TO GIVE THEM A CHANCE TO IMPROVE THEIR SCORES....

When the film was finished, Mrs. Randall told the students that she had their quizzes checked. THIS IMMEDIATE FEEDBACK IS GOOD. SHE SOMETIMES CHECKS QUIZZES 5TH HOUR SO THAT STUDENTS OFTEN KNOW THEIR SCORE THE DAY THEY TAKE THE QUIZ. As she read their names, everyone indicated that he wanted to hear his score so she read the number which each of them got right. Everyone got more than nine except Doug who got six and one-half. (FN 3-1-85)

Mrs. Randall: All right, my next topic is -- the last five minutes here -- is to give out progress reports. Now, not everyone is going to get a progress report. I did not have time to make out progress reports for those of you that had C- or better. But if you want to know your points -- you know what I mean by, you know, the numbers? -- I'll give those to you. You can just add them up. Okay? We only have a few minutes. We'll have to go rather quickly.

Mrs. Randall: Barbara, do you want to know what your percent is, or numbers?

Barbara: Yah.

Mrs. Randall: All right: twenty-four, 23, and 5Ø. (There was some conversation regarding which grade was which.) Don?

Don: Yah.

(This continued with each student wanting and being told his/her grades, except Jody who chose not to have his read.) (FN 5-14-85)

Teacher Personality

The foregoing description of Mrs. Randall's teaching provides characterization to what research -- essentially quantitative -- has previously shown to be effective classroom practice. The qualitative methodology

employed in this study yielded additional data which suggest that a teacher's very uniqueness -- her own personality -- has an influence on the degree of effectiveness achieved when one employs the practices found to be generally effective.

Personality is an elusive quality because the effects of the manifestations of personality -- what one says or does -- depend on the subtleties of how one says or does those things. The researcher spent many ponderous hours trying to identify the quality within Mrs. Randall that enabled her to come across so well to her students. The conclusion she, the researcher, came to is that the key attribute in Mrs. Randall's case was a genuine caring for those she taught.

This positive regard for others presented itself in many ways. In every case, however, it was the feeling behind the remark/action that made it special rather than the mere act or expression itself. For instance, much has been said about the benefits of positive reinforcement. Mrs. Randall used this technique but she probably did not use it any more than the average teacher. What made Mrs. Randall's positive reinforcement extraordinary was the underlying sincerity with which it was given. There was nothing unique about "Good job, Don" (FN 12-18-84); "I like the way you open up your books and get to work" (FN 3-22-85); or "Thank you for your cooperation with the lab. It worked real well" (FN 4-19-85). What was exemplary was the fact that those words represented her true feelings

rather than being mere "teacher talk."

Mrs. Randall's concern/caring for her students was evident in the way she disciplined them. Although she was candid in the way she pointed out the error of their ways, she considered their feelings by not disapproving of them as individuals but, rather, of the troublesome behaviors they displayed:

> Someone was making a squeaking noise with tennis shoes on the floor. Mrs. Randall: Who is squeaking?
>
> Doug: Not me.
>
> Mrs. Randall: I don't care who it is just as long as I don't hear it anymore. (FN 1-11-85)

Even when the behaviors required comparatively drastic disciplinary measures, Mrs. Randall still focused on the inconsiderate aspect of the behavior rather than on the individual himself:

> [Doug had been extremely difficult all hour. Mrs. Randall had warned him that if he continued to interrupt the class, he would have to leave the room.]
>
> Mrs. Randall: We do have a test tomorrow, right? Some of you are not paying much attention. We want you all to get a C or better.
>
> Doug (under his breath): Maybe a D or better.
>
> Mrs. Randall: Doug, go to the office.
> Doug (still under his breath): I didn't say anything.
>
> Mrs. Randall: You have been interrupting me all hour. You are bothering Lyn; you are probably bothering Patti. Just go sit in the office. Number 3 [they were checking their homework]....
>
> It seemed that the class atmosphere was immediately better [with Doug gone]. The other students seemed to be more with it. Mrs. Randall seemed more relaxed. (FN 1-19-85)

Mrs. Randall also demonstrated her interest in the well-being of the individual student by administering the consequences that she deemed necessary but then by forgiving and forgetting:

> Then they checked their answers to the questions. Those who had not done the assignment (Doug, Don, Jeff, and Jody had not; Shawn may have had part of his done) were still expected to take their turns at reading questions and giving answers. Once Mrs. Randall had chastised them, they were treated like the rest. (FN 6-4-85)

It was important to Mrs. Randall that each student in her class benefit from being there. She was realistic enough to know that some were not going to attain all the curricular objectives. For some, the gains were small and perhaps temporary but there were good moments nevertheless. Excerpts from two sets of fieldnotes show that Danny, who may well have been the student who gained the least knowledge of science during the year, sometimes had positive feelings about his school experience and enjoyed some success, however contrived, in science class:

> I was surprised when the hour ended. The discussion was interesting and fast-moving. Apparently Danny was too; he told me that the school day went so fast that when he was in his fourth hour class, it often seemed as though it must be only second hour. (FN 12-11-84)
> Mrs. Randall: Trivia question: When was the famous California earthquake?
>
> This was an interesting break in the routine. Interest immediately heightened. The students started guessing. Mrs. Randall called on different ones who had their hands raised. She gave "hot/cold" feedback. Danny was the one who finally guessed the answer. It was 1906. Danny appeared to be very pleased with himself. (FN 12-18-84)

The latter incident was such that Mrs. Randall could have called on any student to give the correct answer when the guessing got close. She took advantage of the opportunity to make Danny feel successful and perhaps gain some stature with his peer group.

Besides the points already discussed with regard to Mrs. Randall's caring for her students is another important personality characteristic which contributed to Mrs. Randall's effectiveness as a teacher. This is the way she viewed/presented herself as a teacher.

Mrs. Randall is confident in her ability as a teacher. She knows she does her best and that she is generally effective in working with the young people entrusted to her. She enjoys teaching and she enjoys her students. Although she wished she could be instrumental in making each of her science students successful, she recognized that that was not realistic and that there were reasons beyond her control for the problems of a few of her students. In short, she was at peace with herself and at ease in her vocation. Her self-assurance resulted in an easy, comfortable rapport with her students. The following vignette depicts that relationship:

> Mrs. Randall: Let's get the things together to do the second activity on p. 292.
>
> > ACTIVITIES OF YEAST. Obtain two packages of yeast, three identical bottles (label them A, B, and C), three identical rubber balloons, and two tablespoons of sugar. Fill the three bottles one-half full of warm water. In bottle B, mix one package with the water, and then stir in one tablespoon of sugar. Stretch a balloon over the top of each of the

> bottles. Observe the balloons after one hour. What has happened to the balloon over bottle C? Why?
>
> Place a one-hole stopper in the top of bottle C. Run a glass or rubber tube from bottle C to a beaker of limewater. Bubble the gas into the limewater and observe the change that takes place. Carbon dioxide gas turns limewater white. Was carbon dioxide gas formed in bottle C? Justify your answer.
>
> Observe a drop of liquid from bottle C under a microscope. What shape are the yeast cells? (Heimler & Neal, 1979a, p. 292)

Mrs. Randall told them to make predictions about what would happen under each of the three experimental conditions.

The students all moved up to the front three rows (across) in order to see better what the teacher was demonstrating. Jeff had asked first if he could move up. When he got permission, the others moved up too.

Mrs. Randall (about the yeast): There goes my bread for the weekend. That's okay; I would rather ski....

Everyone was crowded around the front lab table watching what Mrs. Randall was doing. The students were excited and interested. Mrs. Randall was obviously enjoying the activity. At the same time, she appeared hurried about getting things done and had to occasionally put a damper on the exuberance of a student or two....

When things were set up, she had them return to their seats....

She took the balloon off bottle C and the mixture spattered all over her. There was friendly laughter. IT WAS APPARENT THAT THE STUDENTS WERE LAUGHING WITH, NOT AT, HER. She was poised as she wiped the yeast-sugar mixture off her blazer, blouse, and slacks and remarked about how she smelled. One of the students said she had yeast in her hair. She questioned whether she really had some in her hair but the students quickly assured her that she did not.

Don said he wished it had happened to Mr. Jerome (a former teacher). He seemed to think that would have been much funnier than it was to have it

happen to Mrs. Randall....

> Mrs. Randall: I hope you enjoyed these activities. I know I had a good time. That (the mishap) is the part you will remember. (FN 3-15-85)

The classroom atmosphere was generally positive. The researcher noted this in an observational note in December soon after formal observations began:

> IT OCCURRED TO ME THAT IT WOULD BE NICE TO BE A STUDENT IN THIS CLASS....I FEEL VERY POSITIVE ABOUT THIS CLASS -- THE STUDENTS, THE TEACHER, THE WHOLE ATMOSPHERE. (FN 12-18-84)

As the year and the observations progressed, it became more and more apparent that it was indeed good to be a student in the second-hour seventh-grade science class. And it also became increasingly evident that the one most important reason for the positive atmosphere was Mrs. Randall herself.

So it was that Mrs. Randall did the things that most effective teachers do and that her effectiveness was enhanced by her own personal traits of sincere caring and a relaxed, self-assured style.

Learning

In focusing on teaching in the preceding section, much has been said about learning as well because the two are, of necessity, interdependent. By the same token more is said about teaching in this section which describes the student learning that was observed in the seventh-grade science class.

Acceptable Grade

Mrs. Randall's dominant goals for the class were based on the textbook. The grades she assigned signified a degree of progress in the direction of that goal; that is, student grades were an indication of how well they had learned the subject matter. The evidence which follows points out that the main student goal focused on the grades received rather than the knowledge gained. The vignette which follows, taken from fieldnotes, shows that the students paid more attention to questions initiated by the teacher than to student-posed questions:

> Question #2 (p. 301) was "What temperature would you expect at 9000 meters above the earth when the ground temperature is 15 degrees Celsius?" After the correct answer was given, Mrs. Randall said: I will expect you to know how to do these. Do you want to work out another of them together?
>
> They indicated that they did, and Mrs. Randall put another problem on the board. Most of the students were involved....There was a real atmosphere of working/learning.
>
> A student posed a question about what an answer would be in Fahrenheit. Mrs. Randall directed him to a conversion chart in the book saying she had forgotten the formula. She located the formula and illustrated on the board how they could convert answers from Celsius to Fahrenheit. Most of the other students did not bother to turn to the conversion chart nor did they appear to be paying very close attention to the explanation. (FN 1-22-85)

Mrs. Randall recognized and accommodated the students' interest in obtaining an acceptable grade as shown in the following class session transcript:

> Jeannine: Are we going to have to know what an enzyme is?

> Mrs. Randall: Yes. Now, you wouldn't list this in the order of organs of the digestive system.
>
> Jeannine: It's not an organ?
>
> Mrs. Randall: No. That's why I didn't number it. Okay? It's just something there too....
>
> Mrs. Randall: Okay, blood is made up of several things but since we're in a science class where we don't want to get into too much detail, we'll just mention a few things. Now don't think this is the only thing that makes up blood. We have red and white blood cells and so on, but they don't mention that so we won't get into it....
>
> Mrs. Randall: Okay, in addition to blood, in the book for the circulatory system, we also have a series of tubes, and again the book just calls those blood vessels for right now. We're not going to differentiate between arteries, veins, and capillaries. They are just saying that it has blood vessels. (TRANS 4-23-85)

Mrs. Randall and her students were interested in extended curricular and related information but the students wanted to concentrate on the material they would be expected to learn/know; Mrs. Randall helped them to differentiate between what they would be held accountable for and what was simply additional/interesting information.

The communication patterns of the classroom were also in keeping with the student goal of an acceptable grade. Since Mrs. Randall determined what material the grades she gave would be based upon, she was the one with whom the students needed to communicate. The following transcript attests to the fact that most communication was channeled through her:

> Mrs. Randall: [Chapter] 16.11 deals with the frog's respiratory and digestive system. Well, let's put the frog here first. Respiratory and digestive systems (writes). First of all, let's take a look at the respiratory system of the

frog....What's the purpose of the respiratory system? It doesn't matter if you are talking about a frog or any animal; they have a respiratory system. What's the purpose of it? Brad?

Brad: Breathing.

Mrs. Randall: What do we mean by breathing?

Brad: (Unintelligible.)

Mrs. Randall: That's the word I want, oxygen. For obtaining oxygen. That's the purpose of the respiratory system, to obtain oxygen. A frog obtains oxygen two ways. One way is through its lungs. The other way -- In the winter when he is hibernating down there, he certainly is not breathing mud.

Student: Oh, yah!

Mrs. Randall: It's getting oxygen through its skin. Oxygen is diffused into the blood. And a frog -- You have to realize that, when it's hibernating, it doesn't need much oxygen because it's not eating much, right? Like nothing. So there's not a whole lot of food to burn up. Rob?

Rob: Also, he uses gills.

Mrs. Randall: Yes, and when he is a tadpole, that would be the third way. When it is a tadpole, it would have gills that it uses for obtaining oxygen from the water (unintelligible), right? But when it is a frog, it has two ways of obtaining oxygen. You might want to jot that down. I'm not going to put every note on the board today but jot it down. The way to obtain -- two ways to obtain oxygen: through its skin and through its organs of respiration, the one that you think of most often, lungs. (TRANS 5-7-85)

This classroom transcript, as well as others provided herein, reveals that student talk was often not picked up by the tape recorder while most teacher talk could be understood; this, in spite of the fact that the recorder was as close to most of the students as it was to the teacher. The transcripts show also that Mrs. Randall rather

routinely repeated or rephrased what a student said in order to facilitate student understanding.

In asserting that the overriding student goal was an acceptable grade, the qualification must be made that the meaning of "acceptable grade" varied from student to student. Anything less than an A would have lowered Johnny's average and would undoubtedly have been a disappointment to him. Bill acknowledged in a quiet, matter-of-fact way to the researcher that school was quite easy for him and that he maintained his A's and B's without taking much work home. Had he wanted, he probably could have been an all A student with little additional effort. Some B's were acceptable to him. Jeannine, on the other hand, had to spend quite a lot of out-of-school time to maintain a similar average (part, but not all, of the difference was that she took band during the only study hall period). She already had some career goals and knew good grades would help her attain them. Jeff struggled to maintain passing grades; although he would have liked to have done better, D's had become acceptable because they at least would allow him to progress from grade to grade with his peers.

Allan's performance demonstrated a notable exception to the student goal of an acceptable grade. As explained in the profile of Allan in Chapter Four, grades were not important to him but learning was. He described science as an "adventure" which was easier than other subjects because it "aroused" his interest in the world

about him. Allan's school attendance was sporadic. He got C's in science. He did very few of his assignments, but he did well on tests and quizzes.

Student Performance

Because Mrs. Randall based her grades on homework as well as tests and quizzes, there were widely different patterns of performance among the students. Table 2 gives the students' percentages on homework, quizzes, and tests, as well as their overall percentages and grades, for the third of the four marking periods of the year. Figure 7 graphs these percentages for selected students, the four discussed in Chapter Four (Jeannine, Bill, Allan, and Jeff) and Janice (included to represent hardworking, but low-achieving students).

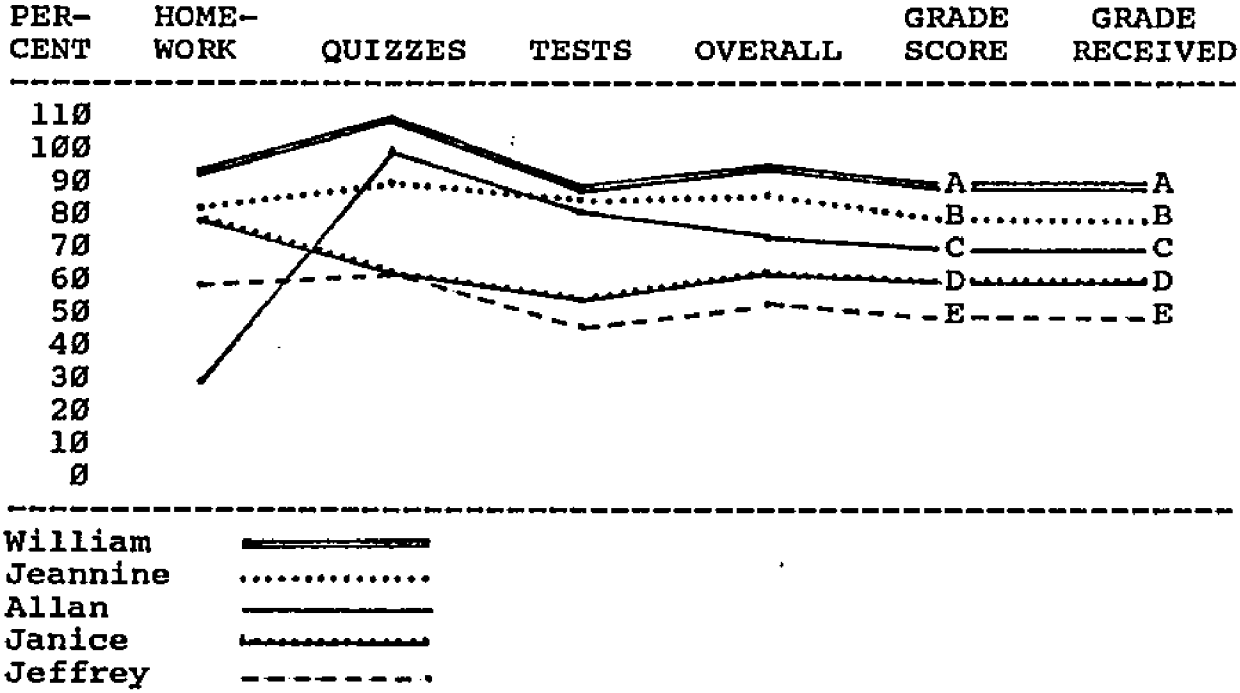


FIGURE 7. PERFORMANCE DISTRIBUTION FOR SELECTED STUDENTS FOR THE THIRD MARKING PERIOD

Janice had to work hard for even a marginal science grade. Had she been in the other section of seventh-grade science where homework grades were not counted in the term grade, she probably would have failed the course. Science and math were her most difficult subjects; she was somewhat more successful in English and geography and did very well in band and physical education. The researcher did not learn what was considered acceptable to her (she was not one of the students interviewed); however, both of her parents were college graduates (father, B.S.; mother, L.P.N.) suggesting that there may be similar hopes and plans for and by Janice.

Mrs. Randall's grading scale is given below:

PERCENT	GRADE
94+	A
90-93	A-
88-89	B+
83-87	B
80-82	B-
78-79	C+
73-77	C
70-72	C-
68-69	D+
63-67	D
60-62	D-
60 and below	E

Keeping in mind that the 90's or above are the A's; the 80's, the B's; the 70's, the C's; the 60's, the D's; and below 60 is failing, one can see from Table 2 and Figure 7 that different students took different routes to attain the grades they did for that marking period. Bill achieved at a B level on homework, had a high A average on his quizzes, and fell to a low A average on his tests. Jeannine had B

TABLE 2: STUDENT PERCENTAGES AND GRADES FOR THE THIRD MARKING PERIOD

NAME	PERCENTAGES				GRADE
	HOMEWORK (25%)	QUIZZES (25%)	TESTS (50%)	OVERALL (100%)	
John	96	108	100	101	A
Barbara	88	112	98	99	A
William	96	112	90	97	A
Anne	80	104	98	95	A
Robert	92	104	90	94	A
Carrie	92	96	90	92	A-
Jeannine	84	92	86	87	B
Bradley	72	96	86	85	B
Mindy	72	92	84	83	B
Helen	76	92	78	81	B-
David	80	88	76	80	B-
Steven	80	84	78	80	B-
Samuel	80	80	76	78	C+
Allan	32	100	82	74	C
Ned	72	84	68	73	C
Mark	64	72	66	67	D
Lyn	56	76	64	65	D
Donald	76	64	58	64	D
Janice	80	64	56	64	D
Jody	24	88	72	64	D
Patti	64	76	56	63	D
Gerald	48	76	58	60	D-
Linda	56	60	62	60	D-*
Alice	52	60	60	58	E *
Shawn	64	44	60	57	E *
Jeffrey	60	64	48	55	E
Daniel	24	24	40	32	E
Douglas	8	32	32	26	E

*Mrs. Randall raised the actual grade given to the next higher grade (due to a positive attitude, progress, etc.)

NOTE: Percentages above 100 were achieved by doing work for extra credit or by doing well on quizzes where there were often extra credit questions.

averages on homework and tests but achieved an A average on quizzes. Allan "failed" his homework, got a perfect score on quizzes, and fell back to a B level on tests. Jeff averaged D's on homework and quizzes but failed his tests. Janice averaged B's on homework, D's on quizzes, and failing grades on tests.

Grades were the students' reward for doing well, but for many students grades were punishment rather than reward. Report cards were issued four times a year, at the end of each marking period. For the 1984-1985 school year, the marking periods ended on November 9th, January 25th, March 29th, and June 7th. Classroom observations were not being made in October and November, so there is no classroom environment documentation for that period. Throughout the rest of the year, however, it was apparent that the usual positive classroom atmosphere took on a tone of disgruntlement around report card time. Fieldnotes of the March 22nd class period illustrate this point:

> As I entered the classroom, the students were expressing their curiosity about some experiment setups from another class which were on the countertops around the room. Mrs. Randall entered at the back of the room as the bell rang. Several students were not in their seats. She pointed out several individuals who were "tardy." She asked what they were supposed to do as far as the things around the room were concerned. The reply was given that they were not supposed to touch them. She suggested that some had. A girl confessed that she had bumped one of the setups with her books. Mrs. Randall attached a hose but was not sure whether the experiment had been disturbed or not.
>
> She gave them some time to work on their vocabulary words. I don't think anyone worked. They were really restless. Mrs. Randall said she

had planned a lab but that they probably wouldn't do it today. She implied that they did not seem settled enough for that type of activity. Mrs. Randall: If you don't cooperate, I don't cooperate.

Mrs. Randall gave directions for exchanging crossword puzzle papers to check them in class. She mentioned that this was in recognition of National Wildlife Week. She brought me a copy.

Mrs. Randall announced that they would stay a minute after class to make up for time lost and that she would extend that if they did not settle down. They settled noticeably as the checking activity progressed.

Someone was at the door to get the attendance slip. Mrs. Randall said they would have to delay a moment (the class activity). She reminded them that they would lose another minute if they got noisy. There were 25 students present today. She took the slip to the person outside the door.

Mindy was reading a novel. Mrs. Randall took it away from her. Mrs. Randall asked her where her puzzle was. She said it was at home. Mrs. Randall told her to sit quietly and to listen.

Don raised his hand and asked if he could move to the front. Mrs. Randall said: Right up here. (She indicated the seat by Allan at the front left table. Don had been sitting by Danny.)

The students raised their hands to indicate that they were ready with the answers. Mrs. Randall gave the place designation (i.e. 24 across) and then the definition, and the students gave the answer. Mrs. Randall then spelled the answer. She said answers were wrong if not spelled correctly. If they did not have their puzzle done, they did not get one to check. Otherwise, each paper was checked by the person directly behind the one who did it.

Mrs. Randall: Not too many people are participating in these today. You just don't feel like raising your hand?

Mrs. Randall: Put your name and "Checked by" and pass it back to the owner. Count how many wrong and put it at the top and circle it. Jeff asked how many possible answers there were. Mrs. Randall said there were 52. She collected the papers....

Mrs. Randall: We sure aren't getting along very well today. I feel tension in the air. I feel animosity. Someone would like to...(she snarled to demonstrate).

Shawn: Are you psychic? (It did not appear to be a serious question, and Mrs. Randall ignored it.)

Mrs. Randall started to lecture....

Mrs. Randall took a magazine from Doug without saying a word. He put his head down on his arms on his desk and closed his eyes....

Mrs. Randall: Since Mrs. Randall is such a nice person and it is Friday, there is a good chance she will forego that one minute after class except for the ones who were tardy. Danny, don't argue with me. (He had started to protest about being tardy.)

Doug: Will we be marked tardy?

Mrs. Randall: In my mind. Next time it will be in my book....

The bell rang. Several students started to rise but paused as Mrs. Randall said: The five or six of you who were tardy are to stay. The rest of you push in your chairs and you may go.

Five students stayed. Brad protested that Shawn had been up when the bell rang and that he left with the others.

Mindy came up to get her novel. Mrs. Randall gave it to her.

Mrs. Randall excused the rest of the students. (FN 3-22-85)

A sufficient number of the students were motivated and interested most of the time so that a positive classroom environment was generally maintained. Grading time, however, was a dreaded time for some students. Their vulnerability during that critical time resulted in an escalation of negative classroom behavior which adversely affected the general classroom atmosphere.

On the science survey (conducted by the researcher. See Appendix F) ten students reported that family members, mostly parents, helped them study. Five of these were D or E students. Given this family interest and investment, it may well be that a student felt that he/she had failed the key people in his/her life by doing poorly.

Jeff was the only one of the regular education students who failed science the third marking period. (He improved enough the fourth marking period that he got a D- for the semester.) Yet Jeff scored at the 70th grade percentile on the science subtest of the WJ-PEB which requires verbal responses to verbal questions. Based on this and on conversations with Mrs. Randall and Jeff's mother as well as on her own observations, the researcher feels that Jeff's poor performance in science class was due to his poor study skills -- especially his poor reading ability -- rather than an inadequate knowledge of or interest in science.

Student Interest and Involvement

Although most of the students set their sights on an acceptable grade, this does not mean that they were not interested in things scientific, but rather that there was often a disparity between what they were interested in and what they needed to know/learn in order to attain that acceptable grade. The students enjoyed bringing things into class, such as chunks of coal and rock collections, books and/or articles (on subjects ranging from aircraft to

cosmetology, to Antarctica, to archeology), tadpoles, swamp water, moss, and materials for laboratory experiments (nutrient agar, special paper, etc.). Several reported that they conducted experiments at home. There were lively discussions -- which occasionally got somewhat afield -- attesting to student interest:

> Mrs. Randall: Trivia question: When was the famous California earthquake?
>
> This was a break in the routine. Interest immediately heightened. The students started guessing. Mrs. Randall called on different ones who had their hands raised. She gave hot/cold feedback. Danny was the one who finally guessed the answer. It was 1906. Danny appeared to be very pleased with himself....
>
> Barbara raised her hand and told of having earthquake drills in school when she was younger and lived in California. Another student asked a question of her in connection with this. Linda also spoke of earthquake drills.
>
> Shawn: What do they do for floods?....
>
> Barbara reported about a fire in 1981 in California when everyone had to be evacuated....
>
> Barbara reported how a substitute teacher from Ohio panicked during a type four (felt by several persons in motion, movable objects disturbed, walls make cracking sound) earthquake in California.
>
> Doug talked with animation of a fireball that struck a house which used to stand near where his home is.
>
> Things seemed quite relaxed today. (FN 12-18-84)

The students enjoyed those aspects of class that had little to do with the grades they received. Perhaps the mere fact that they were not necessarily expected to "learn" those things added to their appeal. Student performance was the goal but the students appreciated being sidetracked and

were enriched in the process.

Other positive, but not intensely goal-directed, activities were the supplemental audiovisual presentations. There were movies, filmstrips, and television shows. They were shown for a variety of purposes: to introduce a unit, to elaborate on the textbook subject matter, to summarize or end a unit, or simply to take advantage of an opportunity to involve the students in some aspect of science they were not currently studying (in the cases of some of the television shows). Whatever the purpose, the students were aware that they were not apt to be held accountable for something that was included in an audiovisual presentation but was not covered in the textbook. (One exception was a film on geology that had a test in the study guide which came with it. Mrs. Randall had the students take this test and counted it as a quiz.) The students did not -- and were not expected to -- take notes on audiovisual presentations. Occasionally a student would work on his/her homework while a film was being shown. In short, the students usually enjoyed the films for the interest and variety which they added to the lessons but did not feel they needed to master the subject matter because they would not be tested over nor graded on it.

Impediments to Learning

Throughout the year there were factors that interfered with the attainment of classroom goals. Although seemingly minor, their cumulative influence was significant.

One factor, which presented itself once each science class period, was the practice of giving the daily announcements over the PA system. The following class transcript illustrates the effect of this interruption on the classroom instruction:

> Mrs. Randall: Okay, what is the -- During the daytime, a plant carries on a process called transpiration. What does that mean? Bill?
>
> Bill: Loss of water through the leaves.
>
> Mrs. Randall: All right, loss of water through the underside of a leaf. What is the opening in a leaf called -- through which this water passes? Helen?
>
> Helen: Transpiration?
>
> Mrs. Randall: All right, the word is transpiration but what's the opening on the underside of a leaf -- or the openings on the underside of a leaf -- called? Linda?
>
> Linda: Guard cells.
>
> Mrs. Randall: All right, the guard cells surround this opening but what's the opening called? Rob?
>
> Rob: Stoma.
>
> Mrs. Randall: Stoma. Okay, so what I'd like to do is take this dry plastic bag, all right? I didn't breathe in it or anything. And I'm going to put this over the plant and tie it up, okay? (Somebody protested.) I know; I'm cruel -- unusual punishment.
>
> Student: Is that a real plant?
>
> Mrs. Randall: That's a real, real, real plant. (Some students laughed.) That's a good question; it is real.
>
> (Over the intercom): May I have your attention, please, for the following announcements? (There was a total of seventeen items in the morning announcements, taking approximately three-and-a-half minutes.)

Mrs. Randall (after two or three starts, trying to get their attention): All right, the experiment we're working on -- The dry ones are still dry. There is no germination. The ones that came out of the refrigerator -- You can look at them back here, the ones going horizontal. No germination has occurred there yet either. So therefore, the ones in the drawer that were moist did germinate. The ones that were dry did not. I would like you now to write up a -- you know, finish your observations on that -- and write up a conclusion to the experiment. Do seeds grow in different environments? Is light necessary for seed germination? Write up your -- you know, just a sentence or two for a conclusion, and I will collect them from you tomorrow. So that's your assignment besides having a vocabulary quiz. If you already did it, then you're done.

Student: (Question/Comment.)

Mrs. Randall: Okay, well your --

Student: (Question.)

Mrs. Randall: Oh, (answered to individual). Any other questions? Good. Don't forget the vocabulary quiz tomorrow.

(The class was noisy. Mrs. Randall responded to some individual students' questions and comments.)

(The bell rang.) (TRANS 4-23-85)

Before the announcements Mrs. Randall had been introducing the transpiration experiment. Because the announcements were especially long, there was only time after recapturing the students' attention to hurriedly summarize an earlier experiment in order to prepare the students to record it in their laboratory notes as homework. The result was that Mrs. Randall did not have time to adequately set the stage for the new experiment.

Because the announcements were given during the same hour each day, it is estimated that this activity represented a loss of six days' instructional time in that

class over the year (i.e., an average of two minutes per day, multiplied by 180 days, equals 360 minutes, divided by 60 minutes per class period, equals six days of class).

Even though the researcher had negative feelings about the interruption for the announcements whenever she witnessed it, when it came time to analyze the research data and to disseminate the findings, she became aware that she herself understood the total school milieu much better than she would have if those announcements had not been available to her.

Likewise, the acculturation of the seventh graders into the junior high-high school environment was furthered by the kinds of information included in those daily announcements, as suggested by the following fieldnotes:

> (Over the intercom): May I have your attention, please, for the following announcements?
>
> > There is a sign-up sheet in the office for anyone who wants pictures taken at the homecoming dance. Please bring money to the dance to pay for the pictures.
> >
> > Our congratulations go out to the following students for being nominated for the basketball homecoming representatives: (freshmen, sophomore, junior, and senior names). Nominations for king and queen will be held next week. Dress-up week will be as follows: Monday, sweat day and school pins; Tuesday, mother and father day; Wednesday, farmer day; Thursday, Indian day; and Friday, red and black [school colors] day.
> >
> > [There were others.]
>
> Shawn: Can we go to that [the dance]?
>
> Janice: Only if you have an escort. (FN 2-5-85)

In this manner Shawn, and perhaps others, learned that the only junior high students who were allowed to attend the homecoming dance were ones (undoubtedly only girls) who were escorted by high school students.

Although most of the announcements did not pertain to junior high school students at the time, they still served to inform them of the opportunities and decisions which awaited them in high school.

It is possible that providing the students with the information contained in the daily announcements justified the loss of instructional time which resulted. One questions, however, whether any recognition was given to the fact that there was a definite trade-off (of instructional time for announcement time) involved. Had serious consideration been given to the procedure, it may have been possible to provide the necessary information in a less extensive, less intrusive manner.

Another classroom interference was a broken pencil sharpener. From early December to the beginning of March, the pencil sharpener in the science classroom was not functioning properly. Throughout that time the researcher recorded in her fieldnotes the effect which that seemingly minor problem had on the classroom:

> Jeannine came to sharpen her pencil....Another student came to sharpen his as soon as she left. The sharpener was not working well. (FN 12-4-84)
>
> Shawn raised his hand to ask to sharpen his pencil. Permission was granted. After grinding for awhile, Mrs. Randall asked him to go to the library to sharpen it. She remarked that it should have been taken care of before class. The

implication was that he was disturbing the class. She remarked that since she had sent Shawn to the library to sharpen his pencil, they had better not all want to sharpen theirs. The sharpener still does not seem to be working properly. (FN 1-4-85)

Mrs. Randall: Sharpen your pencils before you come to class. My pencil sharpener is broken and I don't like you going out in the hall. (FN 1-8-85)

Apparently someone asked to sharpen a pencil because Mrs. Randall asked if anyone else wanted to sharpen one. I think she was going to have one person go to the library to sharpen any that needed to be done. (FN 2-1-85)

There was a flurry of activity as papers and books were put away. Rob came up to sharpen his pencil. Mrs. Randall asked if anyone else needed to sharpen a pencil. This apparently followed someone's asking to go to the library to sharpen one. She prefers that one student go with several pencils rather than for several students to leave with a pencil each. She apparently wanted her pencil sharpened too. John told her that he had used the sharpener in the room. Mrs. Randall: Oh, did he fix it?

She tried it and decided that it still had not been fixed. She sent her pencil to the library with the others. (FN 2-15-85)

The new boy came up to sharpen his pencil. Someone told him the sharpener did not work. Lyn raised his hand to ask to sharpen a pencil. He must be doing it for the new boy; they are sitting at the same table. Mrs. Randall had him take several students' pencils. (FN 2-19-85)

I entered the classroom and moved the desk back a few feet. Allan came over to sharpen his pencil. I moved back a little more to allow him room to do so and remarked about the sharpener being fixed. He said he thought it was about time. (FN 3-1-85)

There is no way to ascertain just how much learning is lost in a situation such as the one above. The researcher did not learn whose responsibility it was to see that the sharpener was repaired or replaced. Suffice it to say that some way certainly could have been found to provide

the classroom with a working pencil sharpener in less than three months' time.

There were other interruptions as well which eroded the available instructional time. Because most of the students were transported to and from school on buses, it was the practice to hold many extracurricular meetings during school hours. Students were occasionally called from class for Student Council meetings, class officer committee meetings, and for various other reasons. Track meets were scheduled during the school day, so all the students in track were absent frequently in the spring. Sometimes there were school assemblies which resulted in class periods being eliminated or shortened. Occasionally, but not often, class was interrupted because a teacher or a parent was at the door. Then, of course, in Michigan's Upper Peninsula there are always days off from school because of snow. There were five snow days in the 1984-1985 school year. The mandated 180 school days were, in effect, greatly diminished in actual practice.

Mainstreaming

There was one group of students who did not share in the goal of an acceptable grade nor in the spirit of cooperation that prevailed in the classroom. That group was made up of the three handicapped boys: Danny, Doug, and Shawn. Their problems were so severe and their classroom adjustment so inadequate that the researcher came to question the rationale underlying their placement in the

science class.

The researcher's fieldnotes for one of the last observations of the year portray a day that neither Danny nor Shawn benefitted from being in science class (it is also another example of student disenchantment at report card time):

> Mrs. Randall told the students to do the study questions. She said: Remember about the computer. You cooperate with me; I cooperate with you. Remember the golden rule; do what you want others to do to you.
>
> She told them their tests were corrected, that she just had to put the grades on them. She reminded Danny that they had talked about his coming to class with his work done. He said he had not promised. I GOT THE IMPRESSION THAT HE FELT HE HAD AGREED TO TRY BUT WASN'T SURE HE WOULD BE ABLE TO HAVE HIS WORK DONE EVERY DAY....
>
> Mrs. Randall asked Danny if he needed some paper again. He said he did and she asked Barbara to lend some to him....
>
> Mrs. Randall talked to Shawn (sitting at the front on the far side of the room) about talking to Jody. She suggested that she would probably not be able to let him stay there. She challenged: Prove me wrong.
>
> Doug was absent today.
>
> Mrs. Randall: I don't think I will have to curve the test; very good test results. I think I have about 12 A's.
>
> Danny: No way. I know what I got.
>
> Mrs. Randall: There are some on the other end....
>
> Danny: Mrs. Randall, did I get a D- or an E?
>
> Mrs. Randall: Come up and get your test when I call your name....
>
> Mrs. Randall spoke to Shawn again....
>
> Danny went up for his paper last. He stood at the front of the room and looked at it and said: Hum.

Mrs. Randall told him to go back to his seat.

Mrs. Randall read the correct answers to the test.

She made Shawn move back to this side of the room. He said he was not going to sit there when "he" came back. "He" is Allan....

Danny was standing on his chair seat (desk with an attached chair) and stretching and reaching to the top of the cabinet at the back of the room where his desk was set apart. Mrs. Randall: Danny, I am trying, really trying....

There were 11 A's out of 28 test papers....Mrs. Randall said the highest score was 67 and the lowest was 11.

Some student said: Danny.

Mrs. Randall: No, it was not Danny.

Danny: No, I got 17.

Shawn told Jeff: I got 15....

Mrs. Randall: I don't think we will use the computer today. I have been trying to be patient about your erratic behavior but you are really trying me....

She then proceeded to lecture over textbook material (Chapter 19.1 and 19.2)....

She said she really wanted to do the computer activity today. It had to do with the whitetail deer and fit in with the last two chapters. There was a computer on a cart at the front of the room.

Allan handed in his test and sat down at the table by Shawn. Shawn moved away a little and sat with his back to Allan....

She passed around a duplicated handout and instructed them to look through it. She went to the computer.

Shawn went up and asked her if he could move. She said he could if he would behave himself. He came back over, picked up his books, called Allan "egg face," laughed, and went to a seat closer to the computer. I AM SURE MRS. RANDALL WAS NOT AWARE OF HIS REMARK.

Mrs. Randall said some of the students might already have worked with that computer simulation program as it had been available in the computer room. She said they would do it as a group.

She loaded the science simulation, role-playing program into the computer. It was called "Oh Deer." The directions were that they were to divide into six-member "community" groups. Each group would be composed of a factory worker, an unemployed teacher, a student, a wrestler, and two other people. One person would be the chairperson. The problem they were to deal with was an over-populated deer herd. They were to figure out how to best reduce the herd to a level the area could support.

Mrs. Randall told them they could move up nearer to the screen but that they were not to crowd. There was not much time to work on the simulation.

Danny was standing on his seat, knocking on the cupboard in back of him....

Danny (for the 2nd time): Hi, Mrs. Randall.

Mrs. Randall: For tomorrow -- May I have your attention again? (Chairs were being moved back to their usual places.) In addition to getting your vocabulary words done, you are to study Chapter 19 pretty much on your own. I will give you some talks on it. Read the article on the simulation.

The bell rang. (FN 5-28-85)

There were other instances also when it seemed that Danny was even more difficult when Doug was absent; it was as though he had to take over being the "bad boy" with Doug gone. It was virtually impossible not to reinforce Danny's negative behavior in a group situation. Whenever there was a different, less-structured activity, Danny had difficulty coping. His academic achievement (see Figure 8) and classroom participation were both minimal.

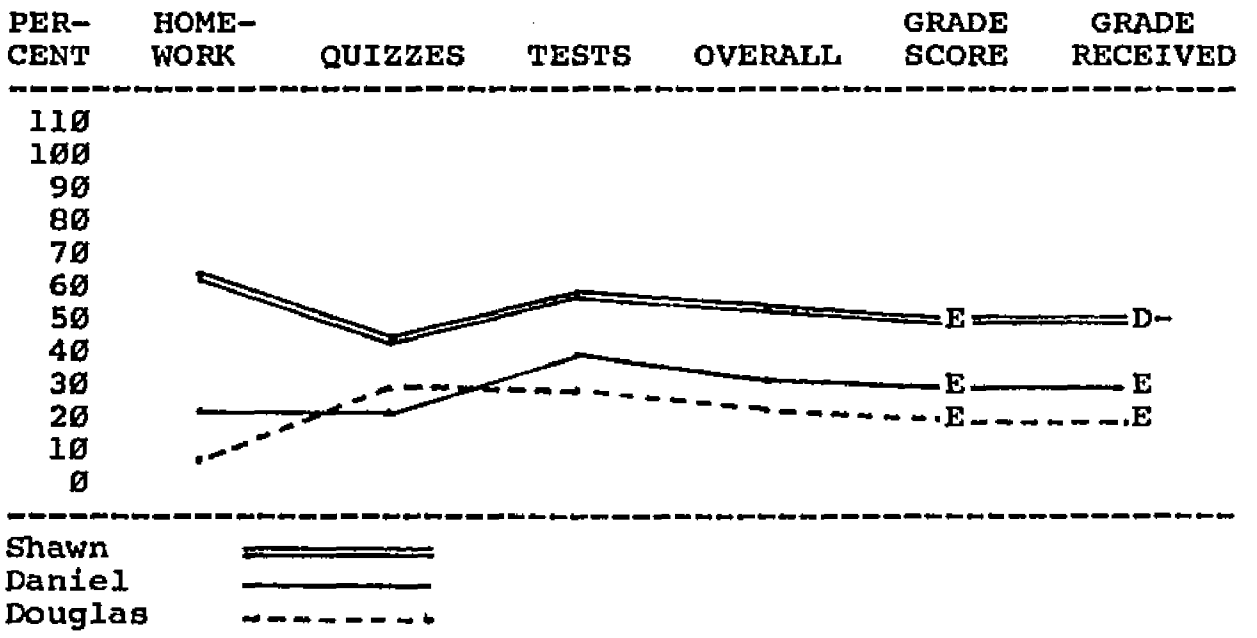


FIGURE 8. PERFORMANCE DISTRIBUTION FOR THE SPECIAL EDUCATION STUDENTS FOR THE THIRD MARKING PERIOD

Shawn did not like to sit by Allan but he misbehaved when he was allowed to sit by someone with whom he liked to visit. The fact that Shawn could not read made it difficult to serve him in the classroom. Mrs. Randall tried, but whenever Shawn was singled out by going to the resource room to have something read to him, he lost face in front of his peers. He, in turn, made fun of Allan, perhaps in a subconscious attempt to present someone else in as poor a light as he envisioned himself. Shawn did attempt to participate with regard to the academic requirements of the class. Although his third marking period efforts fell slightly short of a passing grade, Mrs. Randall rewarded/encouraged his efforts by giving him a D-.

Doug was the most worrisome of all. His cognitive abilities were average, if not above average. Mrs. Randall

tried everything she knew about motivating students. She reinforced positive behaviors; ignored negative behaviors, when possible; and involved him in activities he liked (i.e., running audiovisual equipment). Sometimes he seemed interested and involved. At those times he made good contributions to class discussions. He really seemed to like Mrs. Randall and she liked him, but he frustrated her because he consistently did not do his work. For a few days in February he completed some assignments but the improvement was short-lived. Nothing worked for long; no adult seemed able to get close to Doug. He failed seventh-grade science for the second year in a row, yet his WJ-PEB science subtest score was well above grade level.

Doug appeared to know the rules and the consequences of breaking them but to decide consciously to get into trouble some days:

> Mrs. Randall called on Doug for the answer to [study question] number 4. As she did so, she said: Put the magazine away for the second time, Doug. Three times and I will take it.
>
> He missed the answer to the question. Then Mrs. Randall told him he was exempt as he was absent yesterday when that information had been put on the board....
>
> Doug had the magazine below his book and was still looking at it....
>
> Mrs. Randall: Bring your magazine up, Doug. It must be a good one. Remember I told you the third time.
>
> He claimed that he did not know he had done anything wrong. Mrs. Randall (to the class in general): Do you agree? With me, right? See? We have a democracy. "Hot Rod." I have not read one of those in a long time.

> Doug gave her the magazine when she went back for it. He then closed his textbook. Mrs. Randall: Open up your book, Doug. You are not playing the game right.
>
> Doug: What game?...
>
> Mrs. Randall: Take out a half sheet of paper, and we will take a quick vocabulary test. I did not have time to run it off. Label your paper "Vocabulary Quiz." Put today's date in the corner....
>
> She listed the [vocabulary] words on the board....
>
> The teacher read the definitions, and the students were to write the appropriate vocabulary word from the list on the board. She said she would read them all again when she finished the first time....
>
> When they were on number 12, Mrs. Randall said: Doug, you are not taking the quiz today? You are going to take an automatic zero?
>
> Doug: I don't know none of them....
>
> The bell rang.
>
> Doug went to the teacher and asked for his magazine. She refused to give it to him. Doug: Please don't tell my mom that you took it away from me or she will cancel my subscription. (FN 3-19-85)

Special education law requires that handicapped students be placed in the "least restrictive environment." Standard practice, especially in small schools which for the most part have no self-contained special education classrooms, is that some of the handicapped student's day is spent in a special education resource room and the rest in regular education classes. The regular education classroom was a place where Danny, Doug, and Shawn were different from the other students, with peers to reinforce that differentness. It was a place, at least for Danny and

Shawn, where the level of instruction was too difficult, a constant reminder they they did not measure up to the others.

The intent of the "least restrictive" requirement of the law is that a special education student be placed with his/her normal peers whenever it is in his/her best interest. Although there were times that it appeared as though progress was being made, especially in Shawn's case, the researcher's conclusion after extensive observation was that, perhaps due to limited placement options, an appropriate education was not being provided for these three boys.

The rest of the class was generally accepting, or at least tolerant, of the special education students. Although Shawn frequently exhibited socially inappropriate behavior (for instance his blatant disregard for Allan's feelings in mentioning his poor hygiene), other students did not make an issue of it. His reading problem was very apparent, and the students helped him when he asked.

Probably no one would have dared cross Doug; other students were quite intimidated by him. The researcher noticed two unkindnesses to Danny (by regular education students) during her observations. One time some students hid his books from him, and on another occasion Bill refused to let him sit at the table with him (it may have been that it was someone else's seat, but Bill gave no such explanation).

Mrs. Randall voiced (to the researcher) the fact that the presence of the mainstreamed students made less-structured activity times (such as laboratory experiments) difficult. The students, in the surveys, listed these as the activities they enjoyed most. Bill, when interviewed, said he realized they could not have as many laboratory activities as he would have liked because of the behavior of some of the students during such times. The "disgruntlement" at grading time was accentuated by the presence of the special education students. This all suggests that the mainstreamed special education students negatively influenced the classroom.

All three of the boys had attended only the Pine Forest Schools and had been served in special education (and been mainstreamed) for several years. Their educational plans were reviewed annually, but in a small school system there are not many program options. Identification as a mildly handicapped student (learning disabled, educably mentally impaired, or emotionally impaired) at Pine Forest invariably results in placement in a special education resource room for part of the day and in regular education classes the rest of the day.

In summary, Chapters Four and Five describe Mrs. Randall and her students as they went about the daily activities of teaching and learning in their seventh-grade science class at Pine Forest School during the 1984-1985 school year. In order to provide this description, the researcher engaged in many hours of conscientious

participant-observation in the classroom and in its host school and community; interviewed (formally and informally) many classroom, school, and community people; and gathered a wealth of documentary materials.

Analysis of these data began as soon as the first data were collected and continued until reporting decisions were finalized. Consideration of relevant literature and comparisons with similar situations/sites facilitated the data analysis process.

Although acknowledgment is made that Chapters Four and Five portray Mrs. Randall's science class as seen "through the eyes of the beholder," the researcher is satisfied that the stringent research process provided the "lenses" necessary to correct any defects in her vision.

CHAPTER SIX: SUMMARY AND DISCUSSION

Summary

At the outset this fieldwork study posed five broad, related research questions (Erickson, Florio, & Buschman, 1980, p. 2). These questions are reiterated/discussed here in light of the research findings.

What's happening in this field setting?

The setting of this descriptive research study of the context of early adolescent learning was a seventh-grade science classroom in Pine Forest School, a small public school in a rural community in the Upper Peninsula of Michigan.

Sally Randall, the science teacher, was dedicated to conveying the science curriculum to her students. The instructional framework was similar to that found in most junior high/middle school classes. That is, most class periods were filled by teacher recitation, class discussion, and student involvement with seatwork/homework assignments which were common to all the students in the class. Mrs. Randall's teaching methodology closely paralleled that generally accepted as effective teaching practice: She instituted classroom rules and procedures that were

conducive to a teaching-learning atmosphere, clearly communicated information and assignment expectations to her students, held students accountable for frequent and varied assignments, monitored their performances, and regularly provided them with help and feedback. In addition to this, it was found that Mrs. Randall's personality -- most notably, a sincere caring for her students, professional self-assurance, and an easy sense of humor -- significantly enhanced her teaching effectiveness.

The 27 seventh-grade science students generally responded favorably to the classroom environment she created. Most of them desired to perform in such a manner as to earn a grade which each personally considered acceptable. There were exceptions. One student exhibited an admirable interest in science but an obvious disregard for the grades he received. A very few others displayed learning and/or emotional problems which prevented them from benefitting fully from what the class had to offer.

The seventh-grade science textbook was the basis of the science curriculum. The textbook material was supplemented and extended with numerous materials and activities from other sources, an indication that the teacher was mindful of the needs to provide for different student learning styles and to keep the science curriculum current. Besides presenting the curricular material, Mrs. Randall helped her students in the development of good study techniques.

Although the teacher's and the students' roles were clearly defined, the teacher-student relationship was cooperative. Mrs. Randall wanted her students to do well, and with few exceptions, they wanted to do well. In this sense, then, their goals were complementary.

What do the happenings mean to the people involved in them?

Much of the significance of the classroom happenings revolved around the grades which the students received. To the teacher those grades represented the degree of success she achieved in conveying the information and skills of the seventh-grade science curriculum, especially the textbook information. To most of the students the grades they received were either acceptable or unacceptable based on their personal expectations and aspirations.

Teacher and students alike differentiated between what the students would be held accountable for and what was simply additional information. Additional information was viewed by the teacher as motivational and enriching. It was judged by the students according to their standards of what was interesting and entertaining.

The students were in the process of attaching meaning to the junior high school experience. The year before, when they were in the sixth grade, they had been in a self-contained classroom with one teacher responsible for most of their instruction. In the seventh grade they had several different teachers. Seventh graders were privy to

the daily announcements covering junior high and high school events -- confirmation that they were among the "big kids" now. The transition from sixth to seventh grade was made easily by some of the students; for a few of the others the adjustment was difficult and unsatisfactory.

What do people have to know in order to be able to do what they do in the setting?

The predominant teacher-student harmony in the classroom did not just happen. This fortunate state was the result of many teacher competencies. First of all, Mrs. Randall had admirable attitudes toward her students and her charge in their regard. Secondly, she had good teaching skills. She had learned, through formal and/or informal means, what techniques were apt to be successful with her students. In addition, she was confident in her profession. This combination of confidence and competence lent itself to an easy, relaxed humor which complemented the work-oriented classroom atmosphere.

The students, for the most part, were in tune with what went on in the classroom. They wanted to be successful as they judged success. They viewed the teacher as one who could facilitate that success. Most of the students had the ability to perform adequately in the class. Those few who did not perform successfully were probably unable to, due to intellectual, emotional, and/or perceptual factors.

In addition to variations in student academic performance, the seventh graders also demonstrated

differences in their abilities to perform socially in class. There were wide variations in social maturity. Lack of social adeptness was a real handicap to a few of the students, especially the special education students. On the other hand, there were those who appeared to have limited intellectual potential and yet were able to survive, and even progress, largely due to their social maturity.

How does what is happening here relate to what is happening in the wider social context of this setting?

The subject class was one of the two sections of seventh-grade science. Mrs. Randall began the year teaching both sections, but then her schedule was changed to allow her to set up a computer course for the students in the intermediate grades. Mr. Knapp was given the first-hour class. The two science teachers covered the same textbook material at approximately the same rate. They shared many of the supplementary materials. They did not both grade in the same fashion, however: Mrs. Randall based her grades on homework (25%), quizzes (25%), and tests (50%); Mr. Knapp based his grades only on quiz and test performance.

It was important for the students to learn seventh-grade science because it became the foundation for what was/is to come later in school. Eighth-grade science is a continuation of this course. There is no general science course in the high school. There the students may take physical science and biology (college preparatory) or life science.

The seventh graders were, of course, the youngest of the junior high and high school students. They were just learning what life as one of the "big kids" was all about. They were frequently reminded that they had barely made it; that is, they were accorded only minimal responsibility and privilege compared to those in the grades higher than theirs.

Pine Forest students have the qualified interest and support of the community of Pine Forest. It is not an affluent community; in fact, many of its citizens are quite poor. In the not-too-distant past the school suffered numerous millage defeats, resulting in budget cuts of some academic programs and virtually all extracurricular activities. Although the voters turned down the proposal, a determined citizenry reinstated the extracurricular activities by carrying out ambitious fundraising efforts. The impact of that critical financial situation is still felt. Millages pass as long as the requests are for a "no-frills" program, and a supportive citizenry finances the "frills" with a wide variety of money-making projects. This apparently translates into strong community support and also strong community influence/control, as individually or collectively the citizenry can withdraw that support in part or in total anytime it chooses.

How does the organization of what is happening here differ from that found in other places and times?

Education in Pine Forest used to be (as early as the 1870s) carried out in one-room neighborhood schools. In the early years of the 1900s, a high school was begun. In 1948, the area (three townships) formed one consolidated district but the elementary children continued to attend the neighborhood schools. By 1957, all of the children attended school in two buildings in the village of Pine Forest. Since then (1977), a new fourth- through twelfth-grade building has been constructed a short distance from the village, replacing the outmoded junior high-high school building. The elementary children attend the newer school in the village. Schooling has changed with the times from an eighth-grade education for some of the children, to high school for a few of the more able students, and now to high school for almost all of the young people followed by college or trade school for about half of them.

The course offerings in Pine Forest are, of necessity, limited in number. Teachers frequently have to be generalists rather than specialists as they often do not know from one year to the next what courses they will be teaching. One teacher may well be the "department" as the staff is few in number. Such a situation may be negative or positive, depending on the competence of that teacher.

As a whole, the people of Pine Forest do not feel their children -- or their neighbors' children -- are

shortchanged by these factors. Rather, they like the fact that they know their children's teachers, often on a personal basis, and that the teachers know their students and the families from which they come. They are happy that the school is small enough that children can participate in sports even if they show little real athletic ability. They are secure in the knowledge that their children are generally physically safe at school.

Charles D. Silberman in Crisis in the Classroom (1970, p. 324) said "the junior high school, by almost unanimous agreement, is the wasteland -- one is tempted to say cesspool -- of American Education." One observer in a shadow study in which eighth graders were observed in their classrooms (Lounsbury & Marani, 1964) concluded: "I would not want to be an eighth-grader." This researcher noted with regard to Mrs. Randall's seventh-grade science class:

> IT OCCURRED TO ME THAT IT WOULD BE NICE TO BE A STUDENT IN THIS CLASS....I FEEL VERY POSITIVE ABOUT THIS CLASS -- THE STUDENTS, THE TEACHER, THE WHOLE ATMOSPHERE. (FN 12-18-84)

The writer's fieldnotes suggest that Mrs. Randall's seventh-grade science class was a decidedly better place to learn than were the classes represented in the above-cited investigation and shadow study. This is significant for several reasons. Pine Forest is a small district with very limited financial resources. Science was not Mrs. Randall's first love as far as subject matter is concerned. Indeed, teaching was not even a definite career choice until she was well into her college program. One

might expect, based on these facts, that the seventh-grade science class would be mediocre at best.

This was not the case: Effective teaching and efficient learning were taking place. In addition, the environment (classroom, school, and community) was such that students were developing positive habits and attitudes that will prepare them for their adult lives, whether in Pine Forest or elsewhere.

Conclusions

The student-school-community relationship in Pine Forest has significance for each of its constituents.

The community derives its identity from the school. To live in "Pine Forest" is understood to mean that one resides within the boundaries of the Pine Forest School District rather than within the limits of the village of Pine Forest. If the school district were to consolidate with or annex to another district, the community as such would not survive. That would be viewed as tragic, not only by those whose ancestors worked so hard to secure its future, but also by those who left more populous areas of the state and nation in favor of the simpler, more basic lifestyle of Pine Forest.

Many adults of the community, some who do and some who do not have children in school, look to the school for the entertainment provided through the sports, music, and drama programs. Some also view the school as their only opportunity for grass roots political involvement and/or an

opportunity for voluntary service.

The school is Pine Forest's largest employer and as such has a meaningful impact on the area's economy.

The school is as it is because of where it is. Many of the professional staff members and all of the other employees of the school live in Pine Forest. Most of the teachers were themselves educated in small schools and graduated from Upper Peninsula colleges and universities. They give the community what it wants in a school, not necessarily because of community pressure, but also because they, as individuals, are generally in accord with the desires of the community. There is, of course, occasional disagreement over salaries, taxes, and other issues, but general agreement about what school should be for its students and its support community.

The small school environment of Pine Forest allows students to know their teachers personally out of school as well as in school. This probably lends itself to the students' adopting teachers as role models more often than might be the case in larger schools. Small towns and rural communities have a reputation for expecting teachers to conduct themselves in an exemplary manner, both on and off the job. Pine Forest is no exception.

The limited course offerings at Pine Forest tend to serve average students better than those at the extremes of the school population. Both above- and below-average students are disadvantaged because the school is able to provide few remedial or advanced classes. Some vocational

training is available through the Intermediate School District, a few advanced students take some junior college courses while still in high school, remedial reading is taught through junior high school, and special education students receive resource room services; yet, there are still many students who would benefit from a broader range of offerings.

There is little question but that what Pine Forest School does best is to prepare students for life in Pine Forest; however, since the local economy dictates that many of its young people must seek their fortunes elsewhere, a more critical question has to do with how well the school prepares its students to function in other settings. The answer to that question lies in how nearly the skills needed to function "elsewhere" resemble the skills developed in Pine Forest Schools.

This researcher believes -- and standardized test scores bear this out -- that most of Pine Forest's youth do develop the basic academic competencies needed to go on to institutions of higher learning, to enter the labor market, or to join the military upon graduation from high school.

She feels also that the opportunities for employment available to and engaged in by many of Pine Forest's young people while in junior high and high school -- part-time baby-sitting, waitressing, farmwork, woodswork, yardwork, and others -- promote a good work ethic which is universally beneficial.

Even though many of Pine Forest's students come from broken homes, they often benefit from extended family situations. The extended family may be biological, as in the case of grandparents, or adopted, as in the case of friends and/or neighbors. Whichever the case, there are not many young people in Pine Forest who do not have several adults who are concerned about their welfare. This contributes to a feeling of self worth, another positive factor which will go with them as/if they leave Pine Forest.

It can be said that Pine Forest provides an environment conducive to producing responsible, "solid" citizens.

So it is that the school, its students, and the support community maintain a mutually supportive relationship. Each needs the others and each generally approves of and appreciates the others.

Recommendations

Based on the results of the study, the researcher offers three suggestions to educators. The first has to do with early adolescent instruction; the second with programming for handicapped students; and the third with researching one's own workplace.

Student Study Skills

Whether called junior high school or middle school, middle-level schooling usually requires students to make a transition from a more-or-less self-contained

elementary and intermediate experience to a departmentalized system of instruction. By design, middle-level schooling requires students to be more responsible with regard to the management of their own learning than was expected in the earlier grades. Many students adjust easily to the educational expectations of junior high school. Indeed, they embrace their new autonomy. Others -- and there are a significant number of them -- are not fully prepared to accept the level of responsibility necessary to be successful students.

There is a variety of reasons and combinations of reasons for their difficulties. Some are not as intellectually able as their peers. Others are not sufficiently motivated to learn. The requisite study skills have not yet been acquired by some students. Assignment management is difficult for many young people. These reasons, and perhaps others, suggest that changes are needed to facilitate a smooth transition from the intermediate grades to middle-level schooling.

Students respond to what they perceive as being relevant. When they begin junior high school with its requirement for more self-reliance in their studies, the writer feels they would perceive an emphasis on "learning to learn" as being relevant.

With this in mind, it is suggested that a seventh-grade course -- perhaps science -- be designed and taught with dual goals of teaching/learning the subject matter and teaching/learning how to maximize school

achievement.

Using the subject content, students could be guided in developing such skills as reading for meaning, outlining, taking notes, prioritizing information, discussing the subject matter, memorizing material, using reference materials, doing various kinds of homework assignments, preparing and presenting reports, preparing for and taking different kinds of tests, and so forth. Students could be made aware of different learning styles and could be helped to discover their personal learning preferences. Assignment management techniques and the monitoring of one's personal progress could be stressed.

Further, it would be beneficial for one teacher to work on these skills with the seventh graders and then for a second teacher to continue with study skills instruction within the context of a different course -- maybe social studies -- with those same students the following year at the eighth-grade level.

This is an exciting concept and one that would be well worth the time and effort needed for implementation.

Mainstreaming

As a former elementary resource room teacher and as a special education teacher consultant, the writer had been an advocate of the resource room-mainstreaming special education service model. The research study reported herein has caused her to question the widespread acceptance of that model as the exclusive program delivery system for small

schools.

It is believed that the three mainstreamed students observed in Mrs. Randall's science class may have been somewhat atypical in regard to the severity of their social maladjustment; however, some degree of social maladjustment is often present in the mainstreamed student.

Special education placement is supposed to be based on a handicapped student's educational needs and the determination of the "least restrictive" educational environment where those needs can be met. "Least restrictive" is interpreted to mean "most normal" or "least different." The researcher came to feel, as a result of her research activities, that the science classroom was actually more restrictive for the three special education students than a self-contained special education class would have been. Due to the handicapped students' inabilities to cope with the academic (Shawn and Danny) and social (all three boys) requirements of the classroom, they never became an integral part of the classroom. Rather than facilitating normalcy, the classroom served to reinforce and intensify unacceptable behaviors.

Special education law provides for an annual review of each handicapped child's individualized education plan (IEP). That review, in practice, often becomes a cursory "on paper" exercise that meets the letter of the law but not its intent. The mandatory monitoring program (yearly by the compliance person at the intermediate school district level and once every three years by State

Department of Education personnel) involves checking for documentation that procedures have been followed but does not review the appropriateness of the handicapped child's placement or the quality of special education programs and services. Program quality is seen as the responsibility of the local school district. As small schools do not generally have a special education director, there is often no special educator in the district who has authority with regard to determining programming for handicapped students. The result of all this is that a student's IEP is not necessarily the most appropriate program for him/her and that a student's placement may only be "less" restrictive than full-time regular education rather than being the "least" restrictive environment.

In order to insure that a handicapped student is served appropriately, those charged with planning for him/her (an individual educational planning committee made up of the student's parent(s), special education teacher, regular education teacher, and school administrator) should monitor his plan and progress much more closely than is the usual practice.

Classroom observations would help to assess the mainstreamed student's adjustment to the regular classroom as well as the effect the special education student has on the regular education environment. The influence of special education students on the classroom is usually not considered when mainstreaming decisions are made. The presence of Danny, Doug, and Shawn in the same classroom was

judged detrimental to the education of the other students. In instances such as this, when the practice of mainstreaming has a significant negative impact on the regular education class, there should be some procedure whereby the well-being of the other students is taken into account.

The researcher believes it should be a requirement that an unbiased person, who is knowledgeable about handicapped students, evaluate every mainstreamed student's regular class placement both from the standpoints of the special education student and the regular education students. This is not to be interpreted as a request for further special education mandates but rather as a suggestion to local districts of a way to improve service to all students.

Researching One's Workplace

The researcher has developed some definite feelings with regard to the efficacy of researching one's own workplace. Although the site of this study was not the researcher's primary workplace, it was one of the schools which she had served as an itinerant teacher consultant for a number of years. Furthermore, present plans are that this relationship will probably continue for some time to come.

As anticipated in proposing the investigation, this site familiarity accentuated the challenge for objectivity with regard to the research. Originally, the charge to "make the familiar strange" (Erickson, 1973) meant

that an ethnographer observing in a setting similar to others he/she had experienced should do so as if the activities in that setting were completely foreign to him/her. In this investigation, however, the researcher had experienced the very same school over a number of years. The fact that she had already established a professional relationship with the teacher of the class studied, had been involved in an asessment of two of the students, and knew of one more -- all three of the mainstreamed special education students -- made the need to be objective a specific, rather than a general, challenge.

Besides having prior knowledge of Pine Forest School, the researcher has been a professional (teacher and teacher consultant) in small rural schools for many years. Her husband has been an administrator in similar schools for most of his professional career, and their four children all attended/attend a school of similar size in a comparable rural community. The researcher herself attended small rural schools from kindergarten through the twelfth grade. Indeed, experientially, small rural schooling is "schooling" to the researcher as she has had virtually no experience in large and/or urban or city schools.

The researcher had to be ever aware of the high degree of familiarity from which she was to divorce herself for purposes of data-gathering and analysis in this study. She is confident that this awareness enabled her to sufficiently distance herself from her former experiences so that she could take a fresh look at junior high teaching and

learning in a small school/community.

On the other hand, she does not claim that what she saw was exactly what another educator-researcher would have seen. If a science teacher had observed in Mrs. Randall's seventh-grade science class, much more would probably have been learned/reported about the science curriculum. If a principal had been the researcher, he/she perhaps would have looked more critically at classroom procedural matters and management techniques. A researcher with an urban/city background would have been able to make socioeconomic comparisons with the schools of his/her experience.

This researcher's professional experience, interests, and expertise have all predominantly revolved around low-achieving and/or handicapped students. Although originally vowing that this was not to be a special education study, the researcher now believes it was inevitable that she would, in the end, feel most strongly about that which concerned troubled students.

It is generally believed that as one conducts research and analyzes the findings, he/she needs to be actively involved with related information. This is usually accomplished through an ongoing literature review. The researcher contends that a significant dimension is also added to the research when the researcher is involved in another role in the site and/or in similar sites as he/she conducts the research. She feels that this related involvement promotes objectivity and insight.

In this study the researcher served as the school's (and other area schools') special education teacher consultant prior to, concurrent with, and following the study. Besides promoting entry to and acceptance in the site and helping to make the research and the researcher inconspicuous, this arrangement provided the researcher with related and comparative data which served to enhance and refine the findings.

Researching one's workplace is practical because of the potential for applying the findings. The fact that the researcher's association in the site is continuing greatly increases the probability that the subject site will benefit from the findings because of the opportunity for an ongoing teaching of the findings. Even though the researcher had participated in the site for a number of years as a teacher consultant, her understanding of and appreciation for the school has been greatly advanced as a result of assuming the unbiased stance of researcher. In fact, the researcher was extremely surprised at what could be discerned under these conditions that had not been understood previously.

Furthermore, once one has been a researcher, it is very likely that he/she will continue to view his/her world in a different, more objective, manner. The likelihood of this probably increases when that "world" remains the same. This is a viable personal reason for an educator to research his/her workplace.

It is very meaningful for an educator to research some aspect of his/her work utilizing his/her particular skills. The writer is a case in point. This research project was appropriate with regard to her particular skills in that data collection was greatly facilitated by her shorthand and typing abilities. The fact that an important aspect of her teacher consultant responsibilities involved student observations in the classroom had enabled her to develop observational skills as well. Further, the requirements of the research caused her to hone both her shorthand and observational abilities and encouraged her to extend her typing skill to word-processing on the computer.

In essence then, both the educator and the workplace stand to gain much when he/she undertakes a research study in conjunction with his/her work, as long as the researcher heeds Peshkin's (1982) advice with regard to what he termed "the four R's of research" -- to keep in mind the association between the researcher, the research, the researching, and the results. An escalation of this type of research activity would greatly add to the store of educational research. The educator who researches will, in the process, learn to utilize the research findings of others to a much greater degree. The writer has come to feel very strongly that this type of activity should be promoted.

Implications for Further Research

> As is true for the literature on junior high/middle schools in its entirety, there is very little empirical data from which to draw conclusions about what teaching is like in junior high/middle schools. An accumulation of basic descriptions about the teaching in a variety of junior high/middle schools does not even exist. (Ward, Mergendoller, & Mitman, 1982, p. 32)

The study reported herein provides data on junior high level teaching and learning within the context of one small rural school/community. It suggests other descriptive studies that promise to add to the existing knowledge of early adolescent schooling. Several of them are mentioned below.

1. More studies similar to the one reported herein are indicated to help determine what was typical and what was atypical about the subjects, setting, and activities of this study.
2. Studies of early adolescent schooling in urban and inner city institutions are needed in order to point out how education differs within different sociocultural environments.
3. Descriptive studies of the same setting carried out by different professionals connected with that setting would give information about the influence of one's training and experiences on his/her research findings.

Ethnographic investigations such as those suggested above, in concert with quantitative studies, are needed to promote a more thorough understanding of early adolescent learning on which to base an improved educational delivery system at the middle level of education.

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APPENDICES

APPENDIX A

CALENDAR OF RESEARCH ACTIVITIES

APPENDIX A

CALENDAR OF RESEARCH ACTIVITIES

J U N E 1 9 8 4

SUN	MON	TUE	WED	THURS	FRI	SAT
					1 OBTAINED APPR. TO RESEARCH	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

J U L Y 1 9 8 4

SUN	MON	TUE	WED	THURS	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
	-- L I T E R A T U R E R E V I E W --					
22	23	24	25	26	27	28
29	30	31				

A U G U S T 1 9 8 4

SUN	MON	TUE	WED	THURS	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
		-- L I T E R A T U R E	R E V I E W --			
19	20	21	22	23	24	25
26	27	28	29	30	31	

S E P T E M B E R 1 9 8 4

SUN	MON	TUE	WED	THURS	FRI	SAT
						1
2	3	4	5 OBSERVED 1st-HOUR SCI CLASS	6	7 OBSERVED 1st-HOUR SCI CLASS	8
9	10	11 OBSERVED 1st-HOUR SCI CLASS	12	13	14	15
16	17	18 OBSERVED 1st-HOUR SCI CLASS	19	20	21	22
23	24	25	26	27	28	29
30						

O C T O B E R 1 9 8 4

SUN	MON	TUE	WED	THURS	FRI	SAT
	1	2	3	4	5	6
7	8	9	1Ø	11	12	13
14	15	16	17	18	19	2Ø
	-- P R O P O S A L W R I T I N G --					
21	22	23	24	25	26	27
28	29	3Ø	31			

N O V E M B E R 1 9 8 4

SUN	MON	TUE	WED	THURS	FRI	SAT
				1	2	3
4	5	6	7	8	9	1Ø
11	12	13	14	15	16	17
	-- P R O P O S A L W R I T I N G --					
18	19	2Ø	21	22	23	24
25	26	27	28	29	3Ø	

D E C E M B E R 1 9 8 4

SUN	MON	TUE	WED	THURS	FRI	SAT
						1
2	3	4 OBSERVED CLASS	5	6	7 OBSERVED CLASS	8
9	10	11 OBSERVED CLASS	12	13	14	15
16	17	18 OBSERVED CLASS	19	20	21 OBSERVED CLASS	22
23	24	25	26	27	28	29
30	31					

J A N U A R Y 1 9 8 5

SUN	MON	TUE	WED	THURS	FRI	SAT
		1	2	3	4 OBSERVED CLASS	5
6	7	8 OBSERVED CLASS	9	10	11 OBSERVED CLASS	12
13	14	15 OBSERVED CLASS	16	17	18 OBSERVED CLASS	19
20	21	22 OBSERVED CLASS	23	24	25	26
27	28	29 OBSERVED CLASS:INT TEACHER	30	31		

F E B R U A R Y 1 9 8 5

SUN	MON	TUE	WED	THURS	FRI	SAT
					1 OBSERVED CLASS	2
3	4	5 OBSERVED CLASS	6	7	8	9
10	11	12 OBSERVED CLASS	13	14	15 OBSERVED CLASS	16
17	18	19 OBSERVED CLASS	20	21	22 OBSERVED CLASS	23
24	25	26 OBSERVED CLASS	27	28		

M A R C H 1 9 8 5

SUN	MON	TUE	WED	THURS	FRI	SAT
					1 OBSERVED CLASS	2
3	4	5	6	7	8	9
10	11	12	13	14	15 OBSERVED CLASS	16
17	18	19 OBSERVED CLASS	20	21	22 OBSERVED CLASS	23
24	25	26 OBSERVED CLASS	27	28	29	30
31						

A P R I L 1 9 8 5

SUN	MON	TUE	WED	THURS	FRI	SAT
	1	2	3	4	5	6
7	8	9 OBSERVED CLASS	10	11	12 INT. TEACHER	13
14	15	16 OBSERVED CLASS: SURVEY	17	18	19 OBSERVED CLASS	20
21	22	23 OBSERVED CLASS: TAPED	24	25	26 OBSERVED ALL CLASSES	27
28	29	30 OBSERVED CLASS: TAPED				

M A Y 1 9 8 5

SUN	MON	TUE	WED	THURS	FRI	SAT
			1	2	3	4
5	6	7 OBSERVED CLASS: TAPED	8 PARENT INT.	9	10	11
12	13	14 OBSERVED CLASS: TAPED	15	16	17	18
19	20	21 OBSERVED CLASS	22	23	24	25
26	27 MEMORIAL DAY PARADE	28 OBSERVED CLASS	29	30	31	

J U N E 1 9 8 5

SUN	MON	TUE	WED	THURS	FRI	SAT
						1
2	3	4 OBSERVED CLASS	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23 INT. GRACE	24	25	26	27	28	29
30						

J U L Y 1 9 8 5

SUN	MON	TUE	WED	THURS	FRI	SAT
	1	2	3	4 OBSERVED FIREWORKS IN PARK	5	6 WENT TO REUNION PROGRAM
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

APPENDIX B

FIELDNOTES

APPENDIX B

FIELDNOTES

FN 22285

I took my life in my hands to walk up to the school from the parking lot today. There was no school yesterday because of a freezing rain the night before. The parking lot and sidewalks were still very slippery this morning. I made the mistake of wearing heels.

Mrs. Randall came in before the bell rang.

Mrs. Randall (to me): We are going to do a lab activity today so hold on to your seat.

Mrs. Randall sent some students through to Mr. Karl's room to get microscopes. She gave some rules for keeping the class orderly. She explained that if they dropped a slide it would cost them 50 cents. She said the microscopes cost $200 each.

A student reminded her to take the barometer reading. She did and wrote 29.43 on the board. She said this was the last day to take this, that next week they would graph it.

Mrs. Randall: Don brought some plain paper for us to use for our lab activity.

She reminded the students that they must be quiet. She noticed that one boy was chewing gum and told him that chewing gum was not allowed in class.

Doug: Make him throw it away. She makes me throw mine away.

Mrs. Randall: Cool your jets, Doug. Try being only a student. He is getting rid of his gum.

Mrs. Randall directed the kids to turn to p. 274. On the board she made two drawings showing how they were to arrange their illustrations of what they saw on the slides. The two drawings were the front and the back views of their papers. They were to view a letter "e" cut from a newspaper, an onion skin, and a cheek cell. Each was to be viewed with the microscope set at 40, 100, and 400 powers. After drawing the nine illustrations, they were to answer the two questions on p. 274. For the onion skin and cheek cell they were to label the cell membrane, the nucleus, and the cytoplasm.

She divided the students into groups of two or three to share a microscope.

Mrs. Randall: We will do more of these (lab activities) depending on how this goes. Anyone who is fooling around will be asked to leave the classroom.

Jeannine rolled her eyes when she was chosen to work with Brad. (4-11-85: JEANNINE AND JANICE AND MAYBE LINDA AND ALICE SEEM TO BE MORE AWARE OF THE BOYS THAN THE REST OF THE GIRLS. MRS. RANDALL SAYS DOUG IS VERY AWARE OF THE GIRLS, ESPECIALLY ALICE.)

One partner from each group was directed to come to the front to get the slide with a drop of water with the "e" on it. Jeff had been sent to another room to get the scissors to use to cut out the "e's."

The groups were gathered around the sides and the back of the room at the counters. I moved forward a little so Janice could move around to the end of the counter behind me.

Danny: Wow, that looks weird! How are we supposed to draw that?

Mrs. Randall: Anyone have a jackknife?

Students: We are not supposed to bring knives to school.

Mrs. Randall: I know but some of you probably do anyway.

Steve hesitatingly raised his hand. (4-11-85: THIS TOOK TRUST.)

Mrs. Randall: I would like to borrow it. I won't take it away from you.

She used it to cut the onion. Someone asked her if she was going to cry now.

Doug was the first up to the front to get the slide with the onion skin for his group. Mrs. Randall told him the onion was from her garden last fall.

Doug walked around and looked at the pictures others had drawn. When he got near Shawn, Shawn said he couldn't even see what was on his slide. Doug told him to put his glasses back on.

Shawn picked Janice (same group) up and moved her away from the microscope. (4-11-85: I GUESS I CAN ADD SHAWN TO THE "AWARE" GROUP.)

Most of the students were very busy and interested.

Janice: Look at that! Boy is that neat!

Shawn: It reminds me of my mother.

Carrie came over from her group to look at it. They decided it looked like a fish.

Doug whistled happily as he walked to the front to get something.

Danny had one leg up on the counter. He playfully grabbed his lab partner, Allan, by the hair.

Don, the other one in that same group, called to the teacher for help. Linda went over and helped them adjust the microscope. Don got a chair to stand on.

Mrs. Randall. How are we doing, group? Does everyone see what they are supposed to see?

Don: No, we can't get the 400.

Carrie walked over close to me. When I looked up at her, she moved away. I THINK SHE WAS WATCHING ME WRITE IN SHORTHAND.

Janice washed the slide off at the sink at the front of the room: I now am all wet.

Doug: I am going to pick my finger and put blood on it.

Mrs. Randall: Danny, pay attention. The water is up here I want you to use. They won't be too happy if you use that.

Rob was looking through a very small microscope at his table. I THINK HE MAY HAVE BROUGHT IT FROM HOME.

Mrs. Randall: Doug, I wish you would stay at your own station; then I would know where everyone is.

The group near me used Janice's cheek cell. One of the boys said it was fungus.

Mrs. Randall told Danny she had had bad reports on him and that he messed the whole group up. She said next time he would not be able to participate. I'M NOT SURE SHE MEANT THIS. I THINK MAYBE SHE MEANT THAT IF HE MISBEHAVED ANOTHER TIME, HE WOULD HAVE TO LEAVE.

Rob was excited because he got a piece of onion skin on the little microscope. Mrs. Randall put iodine on the skin.

She came over and told me I could wander around if I wanted, unless I thought it might disturb them. I somehow thought it would be best to stay put. I asked her how they were getting the cheek cell. She said that was what they were using the toothpicks for. They scraped the inside of their cheeks and added some iodine to the slides. I remarked that the boys told Janice her cheek cell was a fungus. She said: They would.

Mrs. Randall asked Doug if he was going downstate with his mother this weekend. He said he was staying here with his dad. Mrs. Randall: Is she going all alone?

Mrs. Randall came over and asked if I had tested Danny. I said I had not as I had gotten the study hall time mixed up and arrived to test him when it ended rather than when it began. I said that I planned to stay and do it today. She said his mother is in the school all the time and that she had asked about the testing. I said I would call her with the results.

Alice tried to push one of the boys out the door at the back (side) of the room. She looked first to see whether Mrs. Randall was looking.

Don (at the front): Yous guys, we're looking at hair.

Doug pushed the top of Janice's head down toward her paper. She was sitting back at her table doing the questions. Doug pulled a yardstick out across the counter brandishing it like a sword. Patti whirled around and indicated that the noise was like someone running a fingernail across a chalkboard. Doug then tried that but apparently his nails were not long enough to make a noise. As he did not get the desired reaction, he soon quit.

Mrs. Randall said to turn the microscopes off so they could cool. Some said they were not done yet. Mrs. Randall said they would finish on Wednesday. She said that on Tuesday they would have a vocabulary quiz and a movie. She told them to hand their papers in if they were done.

(4-11-85: BECAUSE STUDENTS MUST MOVE AROUND FOR A LAB ACTIVITY, THERE IS LESS STRUCTURE DURING THESE TIMES. AS I REVIEW THESE FIELDNOTES, I AM STRUCK WITH THE IDEA THAT IT WAS THE MAINSTREAMED SPECIAL EDUCATION STUDENTS -- SHAWN, DANNY, AND DOUG -- WHO WERE THE LEAST ABLE TO HANDLE THIS "DIFFERENT" PERIOD. DON ALSO HAD A LITTLE TROUBLE SETTLING DOWN. SO DID ALICE.)

APPENDIX C

PORTION OF TEXT, CLASS SESSION TRANSCRIPT, TEACHER'S NOTES

APPENDIX C

PORTION OF TEXT, CLASS SESSION TRANSCRIPT, TEACHER'S NOTES

The paragraphs below are taken from the seventh-grade science textbook. They are followed by a transcript of the class session in which the textbook material was explained and discussed. At the end of the transcript is a copy of the notes Mrs. Randall wrote on the chalkboard as the session progressed.

TEXTBOOK (Heimler & Neal, 1979a):

16.1Ø The Frog

A frog is an amphibian (am FIB ee uhn). Amphibians are backboned animals which spend part of their lives in water and part on land. Each amphibian has a stage in its life cycle when it has gills and lives in water. Later the amphibian develops lungs and can live on land. Toads, salamanders, and frogs are amphibians.

Frogs mate and reproduce during the spring. One female frog can lay from hundreds to thousands of eggs each year. Of all these eggs only a few become adult frogs. Some eggs fail to develop and others are eaten by animals. Many young frogs do not live long because they are eaten by fish, snakes, and turtles. Some frogs live to be as old as fifteen years.

In the tadpole stage, frogs feed on small plants. Insects, fish, and worms are eaten by adult frogs. During winter frogs burrow into the bottom mud of a pond for a winter sleep called hibernation.

A frog's body has a head and trunk. There is no neck region or tail. The head has a very wide mouth, two nostrils, and two round eyes. Behind each eye is a flat eardrum that receives sound waves. Attached to the body are powerful hind legs and two short, stumpy forelegs. In the water a frog uses its legs for swimming. On land it uses its powerful hind legs to leap several feet at a time.

Frogs are important in several ways. They help control insects and provide food for other animals. They are used in scientific research and laboratory tests. Legs from large frogs are used for food by many people. Because of their value, certain species, such as the green frog, are protected by law during the breeding season.

16:11 Frog: Respiratory and Digestive Systems

A frog has two ways of obtaining oxygen. In one way, oxygen diffuses through the frog's moist skin. Its skin has many blood vessels which absorb oxygen. A frog also obtains oxygen through a pair of lungs. Lungs are organs which contain thousands of small air sacs surrounded by tiny blood vessels.

An exchange of gases occurs in the lungs of the frogs. Oxygen diffuses from inside the air sacs into the blood. Carbon dioxide and water vapor diffuse out of the blood into the lungs. Thus, a frog inhales air rich in oxygen. It exhales air rich in carbon dioxide and water vapor. A frog comes to the surface of the water to breathe air.

A frog eats small animals, such as worms and flies. Often it catches its food with a quick flick of its tongue. The large upper jaws of a frog contain tiny teeth which are used for holding food, but not for chewing. The digestive system of a frog includes the following organs: mouth, tongue, pharynx, stomach, small intestine, large intestine, cloaca (kloh AY kuh), and anus. Muscles in the walls of these organs cause them to contract and push the food through the system.

This muscular movement is called peristalsis (per uh STAHL suhs). It is the same kind of motion that occurs in your own digestive system.

Digestive juices containing enzymes are made in the walls of the stomach and intestines. Two organs, the liver and pancreas (PAN kree uhs), also produce digestive juices. The liver produces bile which is stored in a green bile sack attached to the liver. Bile aids the breakdown of fat. It is carried by a tube called the bile duct to the small intestine. The pancreas produces many digestive enzymes. These also pass through a duct to the small intestine.

Most of the digestion and absorption of food occurs in the small intestine of the frog. Waste products pass through the large intestine into the cloaca. The cloaca is a storage area. The wastes are excreted through the anus.

16.12 Frog: Circulatory and Excretory Systems

A frog's circulatory system contains a heart and a network of blood vessels. The heart contains three parts, the right atrium (AY tree uhm), left atrium, and ventricle (VEN truh kuhl).

Blood from the frog's body enters the right atrium. Blood returning from the lungs enters the left atrium. Both the right atrium and the left atrium contract and push blood into the ventricle. Then the ventricle contracts and pushes

blood through vessels to the lungs and other body organs.

A valve between each atrium and the ventricle prevents the back flow of blood. These valves allow the blood to travel in only one direction, from atrium to ventricle.

Hemoglobin in the blood of a frog is in cells called red blood cells. Red blood cells carry oxygen. White blood cells fight disease germs. (p. 344-348)

[NOTE: Also on these pages are career features, illustrative pictures, suggested activities, and related questions.]

TRANSCRIPT:

Mrs. Randall: All right. The frog, on p. 344. That's what we're going to talk about today or (unintelligible). The frog, first of all, is a vertebrate which means that it has a backbone. Our grasshopper and our earthworm were both invertebrates which means they do not have backbones.

Mrs. Randall: Janice, you want to turn around here, please? Put your feet underneath your chair? Thank you. (Unintelligible) more organized.

Mrs. Randall: All right, so first of all what you need to know about a frog -- I'm trying to find my notes here -- is that the frog is a vertebrate. It's one of five classes of vertebrates. Okay, let's go with the -- 16.10, the frog (writes). The frog is what we call a vertebrate (writes) animal. What that means -- It means it has a spinal cord. It means it has a backbone. It means it has a central nervous system. It has a spinal cord; it also has a brain that is attached to the spinal cord. All right? And that's what we mean by -- when we talk about a frog. Our other two examples: Our grasshopper was an invertebrate which means it does not have a backbone; our earthworm was also an invertebrate which means it does not have a backbone. All right? The frog is [a vertebrate].

Mrs. Randall: Now, when we talk about backbone animals or vertebrates, you're talking about five groups of animals. The group that we are going to talk about is the amphibians (writes), all right? The frog is an amphibian. What does that mean? How did it become an amphibian? Well, in order to be an amphibian, you have to live -- or an organism has to live -- part of its life on land and part of its life in the water. That's what an amphibian is.

Mrs. Randall: Now the other four classes of vertebrates -- We are members of one; we are mammals (writes). We're mammals; so are bears mammals; so are whales mammals; so are monkeys mammals. All of those are mammals. And we are mammals because we have certain characteristics. In

particular, the two characteristics that are outstanding for mammals is that you have hair or fur covering your body and you nurse your young with milk that is furnished by the mammary glands of the female sex of the species. All right? Mammals.

Mrs. Randall: Below the mammals then, you would have the birds (writes) or (unintelligible) group. Birds have feathers but they do not nurse their young. They have eggs. They lay their eggs. They're internally fertilized but the eggs develop externally. You have seen birds sitting on their nests with the eggs beneath them incubating the eggs. Once they hatch, then they take care of the young birds until they are able to go on their own -- for a month or so.

Mrs. Randall: Then you have the reptiles (writes), and dinosaurs, from the movie yesterday is certainly an example of the reptile. A reptile and a -- Well, first of all, one other thing I should say about birds and mammals: Both of those are warm-blooded, which means that their blood is at a constant temperature. Ours is 98.6 degrees Fahrenheit; and our body temperature is what? It's at 37 degrees Celsius. A reptile is what we call a cold-blooded organism. What does that mean? What it means is that -- Brad?

Brad: Its blood is the same temperature as the air around it.

Mrs. Randall: All right, its temperature fluctuates with the air. That's why reptiles in the hot, sunny desert aren't able to lay out and sunbathe themselves because their blood would boil over, okay? They would explode, if you want to think of it that way. They have to get underneath rocks, underneath trees, and underneath crevices to shade themselves from the sun. On cold nights they come out and wander about because they have to warm themselves up, right? It gets cold in there in the night and they have to get out and move around to warm their blood up.

Mrs. Randall: Also, amphibians (writes) are cold-blooded vertebrates -- animals. Amphibians are supposedly -- This is the theory of evolution: Reptiles evolved from amphibians, birds evolved from reptiles, and we evolved from birds. All right? Supposedly. If you believe in evolution, if you believe in the idea of change through time --

Mrs. Randall: Then our lowest vertebrates are the fishes or fish (writes). Fish, of course, live all of their lives in water. They do not have any lungs. Right? They have gills for obtaining oxygen from the water. They need oxygen to burn food in their body cells, but they don't get it from the air; they get it from the water. The oxygen that is dissolved in the water, they get it from there. Well, enough.

Mrs. Randall: On the frog, then. That's what we want you to study. That's our example of the amphibian that we are going to study, is the frog. The frog is an amphibian. You might want to put down the definition for amphibian so that you know what it is. At the top of p. 344, certainly the first paragraph gives you a good general description of what a frog is, or what an amphibian is: "Amphibians are backboned animals which spend part of their lives in the water and part on land. Each amphibian has a stage in its life cycle when it has gills and lives in water. Later an amphibian develops lungs and can live on land. Toads, salamanders, and frogs are all amphibians."

Mrs. Randall: Now, they talk about the mating of frogs. Certainly from our mess up here you can see that frogs mate in the spring, lay their eggs in pond water -- the females -- and then the male comes along and fertilizes them. Then, of course, the egg once it is fertilized develops -- once it hatches it develops into a tadpole, right? And then, from the tadpole we go to the adult frog. This happens through about 90 days from the time the egg is fertilized until it is a developed frog. About the first part of July, then, we have the new adult frogs showing up. So that's the metamorphosis, I guess, in the life cycle of the frog.

Mrs. Randall: Now, as a tadpole -- as a tadpole a frog has a tail and it has gills for obtaining oxygen. It doesn't have any legs; it develops legs during the stages of change but at first it has a tail and it has lungs or -- excuse me -- it has gills. That's what makes it different from an adult frog. An adult frog has legs and it has lungs, okay? So there is the difference right there. Also, in the wintertime frogs go underneath the ponds, into the mud, and they bury themselves, and they hibernate so to speak deep underneath the -- (Student comment.) Alligators do the same thing. I believe alligators are amphibians, aren't they?

Students: Reptiles.

Mrs. Randall: Reptiles? Crocodiles are amphibians? I know one is one and one is the other. Okay.

Mrs. Randall: A frog. What does a frog look like? What is the general description of a frog? Well, how do you describe a frog?

Student: Slimy.

Mrs. Randall: Slimy. It is slimy; you bet. It's not dry like a reptile; it's slimy. Like, you're talking about a leopard frog which is the most common example of a frog, the one that you see on the -- I guess, over on p. 346, they show you a frog's head there. It's green.

Student: Ugly.

Mrs. Randall: Ugly? Well, that doesn't tell me enough. Brad?

Brad: (Unintelligible.)

Mrs. Randall: Yah, okay. Yah. But they're still members of the amphibians. Physical features is what I'm looking for, the description of a frog. Barbara?

Barbara: Things like eyes (unintelligible) --

Mrs. Randall: How many eyes does he have? Two, right? Two large eyes; two simple eyes; two large eyes. They have a slimy skin. Right? Sticky, slimy skin. You pick up a frog (student comments) and you have icky stuff all over your hands. Oh well. (Student comment.) Toad is not that way? (Unintelligible discussion.) All right, it has a mouth; it has a tongue; it's green; it has four legs. Does it have a tail? No tail. No, that's a tadpole. Yes? (Student comment.) Webbed feet -- good description. Webbed feet are important for what, Bill?

Bill: Swimming.

Mrs. Randall: Swimming in water. (Student comment.) Bumpy underside? (Student talk.) Oh. (Unintelligible.)

Student: They've got a long tongue (unintelligible).

Mrs. Randall: A long tongue. And a long tongue is useful because -- What does a frog eat? A frog eats flies and insects, and it has to catch those things. It sticks its tongue out, wraps it around an insect, back in the mouth it goes; lunch. (Student laughter.) What? (Student comment.) Sticky; I've been hearing that term. Frogs must be sticky; I've heard that term a lot. (Student talk.) It would have to be sticky so that the -- It's like those things that you hang in your house for catching flies, right?

Mrs. Randall: Okay, so physical features -- You can make your own description here about what a frog looks like. Make sure you put down amphibian, though; that's important. Make sure you put down that it has a backbone.

Mrs. Randall: 16.11 (writes). Let's take a look at that; 16.11 deals with the frog's respiratory and digestive system. Well, let's put the frog here first. Respiratory and digestive systems (writes). First of all, let's take a look at the respiratory system of the frog. Okay, and let's take a look at the respiratory system of a frog. What's the purpose of the respiratory system? It doesn't matter if you are talking about a frog or any animal; they have a respiratory system. What's the purpose of it? Brad?

Brad: Breathing.

Mrs. Randall: What do we mean by breathing?

Brad: (Unintelligible.)

Mrs. Randall: That's the word I want, oxygen. For obtaining oxygen. That's the purpose of the respiratory system, to obtain oxygen. A frog obtains oxygen two ways. One way is through its lungs. The other way -- In the winter when he is hibernating down there, he certainly is not breathing mud.

Student: Oh, yah!

Mrs. Randall: It's getting oxygen through its skin. Oxygen is diffused into the blood. And a frog -- You have to realize that, when it's hibernating, it doesn't need much oxygen because it's not eating much, right? Like nothing. So there's not a whole lot of food to burn up. Rob?

Rob: Also, he uses gills.

Mrs. Randall: Yes, and when he is a tadpole, that would be the third way. When it is a tadpole, it would have gills that it uses for obtaining oxygen from the water (unintelligible), right? But when it is a frog, it has two ways of obtaining oxygen. You might want to jot that down. I'm not going to put every note on the board today but jot it down. The way to obtain -- two ways to obtain oxygen: through its skin and through its organs of respiration, the one that you think of most often, lungs.

Mrs. Randall: Now, what are lungs? You have a pair of lungs. The frog has a pair of lungs. All vertebrate animals have a pair of lungs. What lungs are, are big -- well, not huge -- They're air sacs made up of thousands of tiny air sacs. It's like taking -- I'll have to think of -- I guess, take marbles, put them into a big bag; throw them all in there. Think of marbles as being little, tiny air sacs. Take a whole bag and think of a lung because that's what a lung is. When you get inside of a lung, you breathe in and you have these little, tiny air sacs, all right? And each one of those tiny air sacs -- I don't think they use the word so I'm not going to use the word but there is a word for that and they call it alveoli. When you get into life science and biology, you'll use that term. For right now just mark down that the lungs are made up of thousands of air sacs. And a frog would have a pair of lungs, one on each side, right and left. Barbara?

Barbara: (Unintelligible.)

Mrs. Randall: Ah, you'll have to look that one up. There's various species of frog, and I didn't have that in my notes

here now so -- But I will look it up (unintelligible) be kept consistent.

Student: (Unintelligible) extra credit?

Mrs. Randall: I don't have it in my notes right here but I'll look it up. (Called on student.)

Student: (Unintelligible.)

Mrs. Randall: Through its skin and through lungs. Now, when oxygen is inhaled into the frog's lungs, two things occur. Oxygen is going to be in greater concentration inside of the lungs -- right? In the alveoli, in the air sacs -- than it is going to be in the surrounding capillaries. So which way is the oxygen going to go? It's going to go by diffusion, going from an area of greater concentration to an area of lesser concentration. So when the frog inhales, there is going to be more O2, more oxygen, inside of these tiny, little air sacs than there is going to be in the capillaries that surround the air sacs, okay? Remember now, the frog's lungs are attached to the circulatory system too, because when he breathes in, takes in oxygen, oxygen is going to be in greater concentration in the air sacs that make up the lungs. So the oxygen is going to go from the area of greater concentration to an area of lesser concentration which will be in the capillaries which are attached to the veins and the arteries, correct?

Mrs. Randall: Now the other thing that's going to occur is that the carbon dioxide, which is a waste product from the cells -- when food is burned in the cells, carbon dioxide is given off as a waste product -- that is going to diffuse. It's going to be in greater concentration in the capillaries, right? So which way is that going to go? (Student answer.) Into the air sacs; and then when the frog exhales, where is the carbon dioxide going to go? Out of his body, right? Out into the surrounding air.

Mrs. Randall: That's the way we work, too. We work the same way. When we breathe in, we take in oxygen; we breathe out, we give out -- still give out, if you remember your CPR training, we still give out a certain percent of oxygen, right? (Unintelligible) CPR? Hey, if you are not giving oxygen to the person you are working on, (unintelligible), right? So you are giving out a certain percentage of oxygen but you are also giving out a greater percent of carbon dioxide. That is how a respiratory system works. And then, of course, once the oxygen gets into the bloodstream, it is circulated to all areas of the frog's body. Do I -- I didn't put any notes up there. You don't need any notes, right? Right.

Mrs. Randall: The other one then, is the digestive system (writes). The digestive system -- We then follow a sort of

a routine here. And if you look on p. 346 and you look at the last paragraph there -- about the, not the last line, but the second from the last line -- you'll find the order of the digestive organs in a frog. The digestive system of the frog includes the following organs: mouth -- and in the mouth, you have to include the tongue. The tongue is a flycatcher. You've got to have it there -- and then you have the pharynx, the stomach, the small intestine, the large intestine, cloaca, and the anus. There are two new ones that we haven't had: the tongue and the cloaca. Right? We didn't have the cloaca. We had that on a vocabulary list but we didn't talk about it.

Mrs. Randall: Page 346; look on p. 346. Look at the last paragraph, the second to the last sentence, and that will give you the order of the digestive organs of the frog.

Mrs. Randall: Now, the frog's -- The large upper jaw of the frog contains tiny teeth which are used for holding food but not for chewing. The frog doesn't actually chew. It holds it in place but it won't actually chew like we do.

Student: (Question.)

Mrs. Randall: Page 346, last paragraph, second to the last sentence. You look down there where it says "The digestive system of the frog includes --" See that?

Student: Oh, I see.

Mrs. Randall: Okay?

Mrs. Randall: Okay, those are your organs of the digestive system, for those of you that are copying them down right now.

Mrs. Randall: We have another term that we have to talk about in the frog's digestive system (writes); and that term is called -- and this is one of the vocabulary words so you have seen it before -- peristalsis. If you recall the definition for peristalsis, it means the muscular contraction of the digestive organs -- right? -- which pushes through the organs, through the frog's body. In other words, those organs that you just listed in your notes, they contain muscles. In the walls of those digestive organs there are muscles. How do the muscles work? How do your muscles work? (Unintelligible) contract (unintelligible)? Well, you might contract one but then it has to relax, right? Contract and relax; contract and relax. You might not think that way but that's what happens. The same thing happens in peristalsis. As the food is pushed down through the digestive system, it contracts up here, pushes that funnel of food down; it contracts again, pushes it down a little further; contracts and relaxes a little more, pushes it down. And it keeps on

like this so eventually the food gets to the stomach where it's pushed around quite a bit and then is digested and is pushed around a little more until it's finally mixed up with the digestive juices which contain enzymes for breaking down that food, right? Because, what's the purpose of the digestive system? To take that worm that that frog eats -- The worm as it is is no good for the frog. It has to make that worm so that it is soluble in water. What does that mean? It means that it will dissolve in water. It has to go through chemical changes through the digestive system. The organs of the digestive tract do that for the frog. As it gets to the point where the food or the worm is soluble in water, that is in a useful form. Where is that digested food going to be absorbed into the bloodstream? In what digestive organ? Brad?

Brad: In the intestine.

Mrs. Randall: The small intestine. The small intestine. The large intestine, after the small intestine, all that thing does, that's where the undigested food goes. Any excess water that might be in the undigested food is pulled out of there, all right? Mucus is put around the undigested food so that it can pass out smoothly. The cloaca is the part of the digestive system where undigested food is stored. And then in the anus, of course, is where the food is pushed out, when all that occurs, all that pushing occurs because of the contraction and relaxation of the muscles of the digestive tract called peristalsis. All right? Peristalsis.

Mrs. Randall: Another little word, or new words, that are also given to you in this particular place is the liver. Now that is a digestive organ -- Well, no, I guess (unintelligible) a digestive organ. We don't include it in our route here. The liver produces bile, B-I-L-E; it produces bile. Well, what good is bile? Well bile is a substance that -- It's not an enzyme; it's not an enzyme. It does not actually break down food into usable forms. What it does is, it takes a big chunk of fat. A big chunk of fat only has so much surface area, right? It is like a big box. If you were to take that oscilloscope back there, a big box, you would have six surfaces to work on, right? If you took a saw -- and I don't recommend this -- and you cut it in half, now you have two more surfaces, right? If you cut -- take both of those halves and cut those in half, two more. What are you doing? You are increasing your surface area. You are taking a large chunk, and you are breaking it down into small parts so that you can work with it. That's what bile does. Bile is produced by the liver. It takes big chunks of fat, breaks them down into smaller chunks, increases the surface area for the digestive enzymes to work on. Make sense?

Mrs. Randall: Now, bile is produced in the liver but it is stored in the gallbladder. You might have heard of the gallbladder. Maybe some of your parents have had gallbladder attacks or gallbladder stones. Or your grandmother has. Or your grandfather -- or your aunt -- or your uncle -- (Jeff chuckled.) or your great aunt -- or your great uncle -- Now, what the gallbladder is, is that's where it stores bile. Sometimes this bile -- Bile is a liquid, okay? But sometimes it dries out, and it forms little stones. And these stones get hung up in, you know, the tubes beyond the gallbladder and get stuck there. That's a gallbladder attack; very painful. So what they do is take a laser and shatter them or you have to go in and have them surgically removed. They don't do so much surgery anymore; they mostly shatter them. Janice?

Janice: Ah, you don't need the gallbladder, do you?

Mrs. Randall: Do you need the gallbladder for storing bile? Probably not.

Janice: My mom doesn't have one.

Mrs. Randall: I don't know offhand. I shouldn't say it that way. You need the liver. You need your liver.

Janice: Because --

Mrs. Randall: You can get by without a gallbladder. The gallbladder is just a storage room.

Janice: (Unintelligible.)

Mrs. Randall: Yah.

(Short discussion between Janice and Mrs. Randall.)

Mrs. Randall: The gallbladder is a storage area so I don't think it is necessary that you have a gallbladder but it is necessary that you have a liver. You can't live without the liver but I think you can live without the gallbladder. (Student comments.) I know you can.

Janice: But she has to watch what she eats.

Mrs. Randall: You have to watch what you eat. You see, she doesn't want to eat too much fatty foods because the bile (unintelligible) fast and if you eat too much fatty foods, then the excess bile, there is no place to store it, right?

Janice: (Unintelligible.)

Mrs. Randall: Right. Right. Because of, you see, your fats (unintelligible). That's why. Dave?

Dave: (Unintelligible.)

Mrs. Randall: What's that, Dave?

Dave: (Unintelligible.)

Mrs. Randall: Well, tonight there's going to be a (unintelligible). What time is that on? (Student talk.) I'm going to start watching that. (Unintelligible.) I'm always watching "Sixty Minutes" instead of "Ripley's Believe It or Not." It's on tonight? At 7:00 o'clock? (Student affirmation.) Jeannine?

Jeannine: (Unintelligible.)

(Several students and Mrs. Randall talking.)

Mrs. Randall: But you get a lot of water from foods and stuff, too, so it's not just drinking it; you get it from foods. (Student comment.) Okay, anything else on the digestive system? Oh, one other organ. And that's an auxiliary organ that's connected with your digestive system. It's called the pancreas (writes). This one (indicates liver on the board) produces bile; the pancreas produces a substance -- and I am not sure if they mention that here; they don't say, well okay, they are not going to mention it here. They are not going to get into that. The pancreas also produces digestive juices (writes) -- okay? -- which they secrete into the small intestine for breaking down food.

Mrs. Randall: Now, one note that you should make on the digestive system of the frog is that the small intestine is the area where all food absorption takes place, but also most of the digestion also occurs in the frog's small intestine. It also occurs somewhat in the bowel and somewhat in the stomach but most of it occurs in the frog's small intestine and also the frog's -- Well, (student talk) (unintelligible) most of the digestion occurs in the small intestine. Jeannine?

Jeannine: (Unintelligible.)

Mrs. Randall: Okay, juice is enzymes. That's juice (unintelligible). Okay, any questions on that? What's the matter, Brad? Did you break your pen, did you?

Brad: (Unintelligible.)

Mrs. Randall: Playing with it and broke it. I guess (unintelligible) in that three minutes' time that you go from here to geography you're going to have to stop and wash your hands in the bathroom. I don't know if Mr. Meyer (unintelligible). (Student talk.) And it's all on the table, too?

Brad: No.

Mrs. Randall: Well, you'd better leave it right there then, otherwise you are going to be washing the table too, so --

Don: All right! Can he wash me and Rob's too?

Mrs. Randall: Okay, 16.12, let's move on here. (Writes) Circulatory and excretory systems. What's the purpose of the circulatory system? Don?

Don: (Unintelligible.)

Mrs. Randall: What is -- What material?

Student: Oxygen?

Mrs. Randall: Oxygen is one thing. And?

Student: Hemoglobin?

Mrs. Randall: Hemoglobin is connected with the oxygen. And?

Student: (Unintelligible.)

Mrs. Randall: (Unintelligible) does not look like part of the blood.

Student: Food.

Mrs. Randall: Digested food and oxygen. Distributes it to all body cells. That's the purpose of the circulatory system. Circulatory system -- What is it made up of? Well, it's made up of a heart, and it's also made up of a network of blood vessels. If you look on p. 347, you will see the frog's heart. The frog has what we call a three-chambered heart. A three-chambered heart. All right? What do we mean by that? Three-chambered heart (writes). That's two upper chambers and one lower chamber, all right? It has a right atrium (writes); it has a left atrium (writes); and it has one ventricle (writes). Again, if you recall from a while back -- we've been on this chapter for quite some time but these terms were part of your vocabulary words -- atrium is the upper chamber of the heart; ventricle is the lower chamber of the heart.

Mrs. Randall: Now, I left some room here by the right atrium. I want you to add to them. The right atrium collects blood from all body parts. Okay? You got that down? (Unintelligible reference to CPR training.) Amphibians will have three-chambered hearts. The right atrium collects blood from all body parts. The blood that returns to the right atrium, is it filled with oxygen or is it not filled with oxygen? Is it, in other words -- I don't

know if these terms are used or not, but -- Is it oxygenated blood or is it deoxygenated? Deoxygenated meaning not much oxygen in it. Sam?

Sam: Deoxygenated.

Mrs. Randall: Deoxygenated. The blood that returns to the right side of the heart, to the right atrium, upper chamber of the heart, is low in oxygen. Then from there, where do we go?

Mrs. Randall: All right, from the right atrium -- Where is blood going to go from the right atrium? I need that question answered. Linda?

Linda: (Unintelligible.)

Mrs. Randall: No, it's not. Where does it go from the right atrium? Brad?

Brad: (Unintelligible.)

Mrs. Randall: No, it's not. Dave?

Dave: Ventricle.

Mrs. Randall: Ventricle. The right atrium, the atria, are all the heart's collecting chambers. They don't really -- They aren't very strong pumpers. The blood goes to the right atrium and goes to the ventricle. The ventricle is your pumping chamber of the heart.

Mrs. Randall: Now from the ventricle, where does that blood go? Linda?

Linda: (Unintelligible.)

Mrs. Randall: No, it doesn't. Dave?

Dave: (Unintelligible.)

Mrs. Randall: To the lungs. (Student comment.) Well, it goes through blood vessels. It's a blood vessel that leaves the heart. What do you call the blood vessel that leaves the heart? Any blood vessel that leaves the heart has the term. What do you call it? Barbara?

Barbara: Artery.

Mrs. Randall: Artery. It's going to go through the artery to go to the right atrium to the ventricle through an artery to the lungs. What is it going to acquire in the lungs? What gas is it going to acquire in the lungs? Helen?

Helen: Oxygen.

Mrs. Randall: Oxygen. What is it going to get rid of? (Student answers.) Carbon dioxide. So, it goes from the lungs, it's returning to the heart. What's the blood vessel? Returns to the heart? Any blood vessel that returns to the heart, what do we call it? Jeff?

Jeff: Vein.

Mrs. Randall: Vein. All right, now it's returning to the heart; what chamber is it going to enter? Jeannine?

Jeannine: The left atrium.

Mrs. Randall: The left atrium. Where is it going to go after the left atrium? What other place can it go?

Mrs. Randall: Okay, from the ventricle where does the blood go? Don?

Don: The right atrium?

Mrs. Randall: No. Mark? (Unintelligible.) No. (Several guesses.) No.

Student: Is it an artery?

Mrs. Randall: It goes through an artery, where? Where does it go?

Student: To the body.

Mrs. Randall: To all parts of the body. After it goes to all parts of the body, where is it going to return? Jeannine?

Jeannine: Right atrium.

Mrs. Randall: Right atrium. Then where is it going to go? What's the name of the blood vessel that connects an artery and a vein? Jeff?

Jeff: Capillary.

Mrs. Randall: Capillary. (Unintelligible) arteries leave the heart; veins return to the heart. Capillaries connect arteries and veins. All right?

Mrs. Randall: Now, what else do we need to know about the circulatory system? All right, the blood is made up -- What's the parts of the blood called? Don?

Don: Plasma.

Mrs. Randall: Plasma. In the plasma you have two kinds of cells. Barbara?

Barbara: Red (unintelligible).

Mrs. Randall: Red blood cells do what? What is the function of red blood cells? Mindy?

Mindy: To carry the oxygen.

Mrs. Randall: To carry the oxygen.

Student: The white fights disease.

Mrs. Randall: The white fights diseases. (Unintelligible.) (TRANS 5-7-85)

ON BOARD (developed during lesson):

16.10 The Frog

-- vertebrate
amphibian

mammals
birds
reptiles
amphibians
fishes

16.11 Frog: Respiratory & Digestive Systems

Respiratory

Digestive System -

peristalsis

liver - bile

pancreas - digestive juices

16.12 Frog: Circulatory and Excretory Sys.

3 chambered heart

(1) right atrium
(2) left atrium
(3) ventricle (FN 5-7-85)

APPENDIX D

INTERVIEW SUMMARY

APPENDIX D

INTERVIEW SUMMARY

THE (#'S) CORRESPOND TO THE COUNTER NUMBERS ON THE INTERVIEWER'S PANASONIC TAPE RECORDER. THE INTERVIEW BEGINS AT Ø13.

QUESTION (Ø13):

I still have not been in the classroom consistently enough to know what is generally required for all chapters. Will you list these for me? May I see some lesson plans sometime? May I tape a lesson sometime?

SUMMARY OF MRS. RANDALL'S ANSWER:

We agreed that Mrs. Randall will choose a chapter from the biology portion of the text for which I will do a more in-depth study of all that is involved in teaching/learning the subject matter of a typical chapter. I asked for lesson plans, all of the handouts, quizzes, tests, etc. and for permission to tape a lesson when she is conducting a lecture/discussion/question-and-answer session. We discussed the potential worth of this study to less experienced and/or effective teachers.

QUESTION (Ø72):

Do you check student notes? Notebooks?

SUMMARY OF MRS. RANDALL'S ANSWER:

Last year Mrs. Randall checked notebooks and gave points for them. This year she is checking the vocabulary words instead, the reason being that most students at this level put in their notebooks only what Mrs. Randall writes on the board or specifically instructs them to record. She is interested in the students' answers if I ask the students on a survey whether they record anything besides what the teacher directs them to write.

QUESTION (Ø93):

Have you only let the students use notes for two tests? Were notes different when they knew they were going to be able to use them for that purpose? What were their reactions to using the notes? Did some students do much better because of their notes?

SUMMARY OF MRS. RANDALL'S ANSWER:

The students were allowed to use their notes for two different tests: One time this was announced ahead of time; the other time it was a spur-of-the-moment decision. Mrs. Randall is not sure whether scores improved or not.

QUESTION (107):

Please describe your grading system.

SUMMARY OF MRS. RANDALL'S ANSWER:

94+, A
90-93, A-
88-89, B+
83-87, B
80-82, B-
78-79, C+
73-77, C
70-72, C-
68-69, D+
63-67, D
60-62, D-

The D's are the gray area. Mrs. Randall takes into consideration attitude, progress, etc.

QUESTION (124):

What is included in daily work grades?

SUMMARY OF MRS. RANDALL'S ANSWER:

Vocabulary, worksheets, and study questions are included in daily work grades. She discussed the points for each. She may start giving more points for the study questions. Worksheets come from various places. Mrs. Randall makes up the quizzes. They are not necessarily the same from year to year. The tests are provided by the text publisher.

QUESTION (146):

Please tell me again about your deficiency slip/progress report system.

SUMMARY OF MRS. RANDALL'S ANSWER:

If a student is carrying a D or E five weeks into the marking period, it is school policy that he/she receive a deficiency slip. It goes home, is signed, and is returned. Mrs. Randall, in addition, sends home with A, B, and C students a progress report giving quiz, test, and homework averages. She is now using a computer program to keep track of her grades.

QUESTION (157):

Do you lower a student's grade if he/she is tardy?

SUMMARY OF MRS. RANDALL'S ANSWER:

Mrs. Randall lowers a student's grade for that day's work 5% for an unexcused tardiness. She overlooks some. A student is tardy if he/she is not in his/her seat when the bell rings.

QUESTION (174):

Do you coordinate activities with Mr. Knapp?

SUMMARY OF MRS. RANDALL'S ANSWER:

Mrs. Randall and Mr. Knapp pace the work about the same. It sounds like Mrs. Randall sets the pace. They do not necessarily include the same assignments for a chapter. Mr. Knapp does not count homework as heavily as Mrs. Randall, determining his grades mostly on tests.

(193) I mentioned Mrs. Randall's guiding of students in other subject areas as well as science (especially study skills) and mentioned that I felt this to be commendable, one of the things others could learn from her.

(206) Mrs. Randall asked me whether I was going to observe other teachers. Mrs. Randall said other teachers do not pay any attention to the fact that the study is going on. I indicated that I would like to follow the students through their whole day sometime, if other teachers are willing.

QUESTION (219):

What are extra credit, blue margin questions (FN 1-15-85)?

SUMMARY OF MRS. RANDALL'S ANSWER:

Blue margin questions are the study questions printed in blue ink in the margins of the textbook. They are sometimes done for extra credit, are sometimes used for review, and are sometimes assigned for everyone. The class spends approximately two weeks for each chapter. The life science part of the book may go more quickly.

QUESTION (251):

Do the students ever comment about my presence?

SUMMARY OF MRS. RANDALL'S ANSWER:

The only student comment on my presence was Bill's inquiry as to whether I was coming on the day he wanted to collect the money I had pledged to the Easter Seal Campaign.

We discussed some of the students: Doug, Danny, Lyn, Barbara, Johnny, Bill (model student), Mark (average), Sam, Janice, Ned, Steve, Linda, Don, Gerry, Jeff -- (The basketball coach came in. There was a discussion about Don's grade.) -- (366) Patti. Mrs. Randall suggested that I interview Patti and her teachers from Claxton and make comparisons between the two programs and Patti's performance in the two different classes.

Mrs. Randall said I could have the semester grades on Friday.

APPENDIX E

STUDENT INTERVIEW QUESTIONS

APPENDIX E

STUDENT INTERVIEW QUESTIONS

1. Where do you live? Who is in your family?
2. What does your father do? Does your mom work outside your home?
3. What does your family enjoy doing?
4. Are you glad school is almost out? Has this been a good year for you?
5. What are you planning to do this summer? (vacations, work, etc.)
6. Do you take part in any extracurricular activities?
7. Are you in any clubs or youth groups?
8. Do you do things with other students in your grade outside of school?
9. Do you take any kind of lessons outside of school?
10. What subjects do you like best in school?
11. What subjects are easiest for you in school?
12. Are you going to try to do anything differently in eighth grade?

Refer to survey.

Administer WJ-PEB science subtest.

APPENDIX F

STUDENT SURVEY

APPENDIX F

NAME _____
(Optional)

STUDENT SURVEY
SEVENTH-GRADE SCIENCE

1. What do you <u>like</u> about science?

2. What do you <u>dislike</u> about science?

3. Briefly describe how you study the chapter (i.e., read once and take notes, don't read but listen in class, skim and then read, read dark print, etc.).

4. How long do you keep your science notes and other papers?

5. Where do you keep your notes and papers (i.e., notebook, textbook, etc.)?

6. Do you study with anyone else? Who?

7. Do you study for quizzes and tests? How and what do you study?

8. Is science harder or easier for you than other subjects? Explain.

9. Did you keep track of your grades last marking period?

10. What kinds of science activities would you like more of?

11. What kinds of science activities do you wish there were fewer of?

APPENDIX G

EDUCATIONAL AUTOBIOGRAPHY

APPENDIX G

EDUCATIONAL AUTOBIOGRAPHY

I was born in 1940 in the farmhouse which is still home to my parents in the northern part of the Lower Peninsula of Michigan. My two older brothers, two younger sisters, and I grew up on the large potato and livestock farm which my father and his father developed from what began, in 1913, as an old log cabin, two cows, and one horse on 40 acres of mostly uncleared land.

Mother had been a schoolteacher before her marriage. She conveyed a respect for knowledge to her children. In addition to this, we were taught to hold honesty and hard work in high regard and to revere God and country.

I attended a one-room country school from kindergarten through the eighth grade. The effectiveness of the country schools was discussed around our supper table each year when the top graduating seniors from the high school in town (attended by fairly equal numbers of "town kids" and "country kids") were announced. The year I graduated, it was a source of pride -- but not surprise as such seemed generally the case -- that four of the top five graduates were products of the country schools.

From the time I was little I banked money so that I could go to college to become a teacher. During my teenage years, however, I decided to become a secretary instead. Upon graduation from high school, I enrolled in a

two-year executive secretarial course.

By the time I completed that course, I was determined to continue my schooling (part-time) toward a business education major. My fiance, a teacher, and the inadvertent challenge of one of my professors -- "if you quit college now, you will never go back and you will always regret it" -- influenced this.

I obtained a secretarial position near a university where I could continue taking classes. As fate would have it, there were no business education courses offered, so I registered for what was available, two special education courses. This is how I stumbled upon my "calling."

It is a long story. I married my fiance who by that time had become a teaching administrator. I was a secretary for three years, until the birth of our first child, daughter Ann. Although I was never again employed as a secretary, I value my secretarial training and experience as these skills have aided my educational and professional pursuits.

Over the next several years I accepted a variety of teaching assignments (from preschool through adult education) as a non-degree teacher, hired because there were not enough fully-certificated teachers available. I continued work toward a baccalaureate degree in special education, and our family grew with the births of David, Donald, and Amy. During this time we moved to the Upper Peninsula of Michigan where Jerry, my husband, accepted a

K-12 superintendency.

Twelve years after my high school graduation, I received my B.S. degree in mental retardation. After another year as a regular education teacher, I obtained a position in special education, teaching in a resource room serving third- through twelfth-grade students. The following year I began a stint as a teacher in an elementary resource room. My regular education teaching experience was invaluable in preparing me to teach handicapped students as my regular education teaching experience with "problem" students convinced me of the importance of teaching handicapped students classroom survival skills -- how to effectively seek help and how to make the most of the academic skills they were able to attain.

During this time I earned a master's degree in learning disabilities and began work toward an Ed.S. in curriculum and administration. While a resource room teacher (for seven years), I did some individualized testing of regular education students who were experiencing academic difficulties to aid in making educational decisions in their regard. This testing experience gave me a taste of what it would be like to be a teacher consultant. Such a position became available, promising continued contact with students as well as an opportunity for involvement/influence beyond a single classrooom. I accepted it. I enjoy my role as a teacher consultant.

Soon after I earned my Ed.S. degree, an opportunity for doctoral study presented itself, so my

formal education continued. It is now forty years since I struggled on short little legs to keep up with my bigger brothers so I would not have to walk the mile and a half to kindergarten alone. I have been in school all but three semesters/terms of that time.

It goes without saying that the concepts of continuing education, lifelong learning, and professional development are not new to me. I feel that both my academic and professional activities were enhanced because they were undertaken concurrently. I have enjoyed a rich and fulfilling personal life at the same time I was developing educationally and professionally.

I am a product of my past, especially those people along the way who have had a profound influence on the direction my life would take: my father whose life epitomizes a belief in hard work and dedication to a dream (in his case, the farm), my mother whose love of teaching and learning have always been an example for me, and my husband who feels everyone deserves an opportunity to realize his/her potential/goals.

APPENDIX H

TEACHER CONSULTANT JOB DESCRIPTION

APPENDIX H

TEACHER CONSULTANT JOB DESCRIPTION

INTERMEDIATE SCHOOL DISTRICT

SPECIAL EDUCATION POSITION DESCRIPTION

POSITION: Teacher Consultant

POSITION CURRENTLY HELD BY:

QUALIFICATIONS:

1. Master's Degree or its equivalent.

2. Full approval by the State Board of Education as a teacher in one or more areas of special education.

3. A minimum of three (3) years satisfactory teaching experience including at least one (1) year of experience teaching handicapped persons in a special education classroom.

RESPONSIBLE TO: The Director of Special Education

CONTRACT YEAR: In Accordance With Master Agreement

RESPONSIBILITIES:

A. Consultation Services

1. To establish a weekly schedule in assigned buildings which will provide the T.C. with an opportunity to discuss problems of concern with regular education and special education personnel.

2. Provide consultation with referring agents, support personnel, and administrators with the I.S.D. Special Education Plan.

3. To provide, upon request, consultation to the student study process.

4. To function as a contact or liaison between local school personnel and outside agencies in cases of mutual concern.

B. Diagnostic Services

1. To serve as a member of the Multidisciplinary Special Education Diagnostic Team, providing

supportive assessment data and consultation to team members as assigned.

2. To serve as a Multidisciplinary Team representative to the IEPC.

3. Provide appropriate recipient parties with all written reports completed as a part of the referral/diagnostic process.

C. Records/Reports

1. Collect and provide necessary administrative data for required reports.

2. Provide special education administration with necessary information required for monitoring activities.

3. Attend weekly scheduled student staffing meetings.

4. Attend scheduled administrative/staff meetings.

5. Maintain working files for T.C. caseload.

6. Prepare mid-year and final reports of T.C. activities and submit to I.S.D. Director of Special Education and administrators from assigned school buildings/districts.

D. In-service

1. To develop and implement in-service training programs in the area of the individuals' interest and expertise for regular and special education personnel, parents of handicapped, and the general public.

2. To actively keep abreast of current research and innovative techniques through educational journals, workshops, and conferences.

E. Assume other duties/responsibilities as assigned by the Director of Special Education.

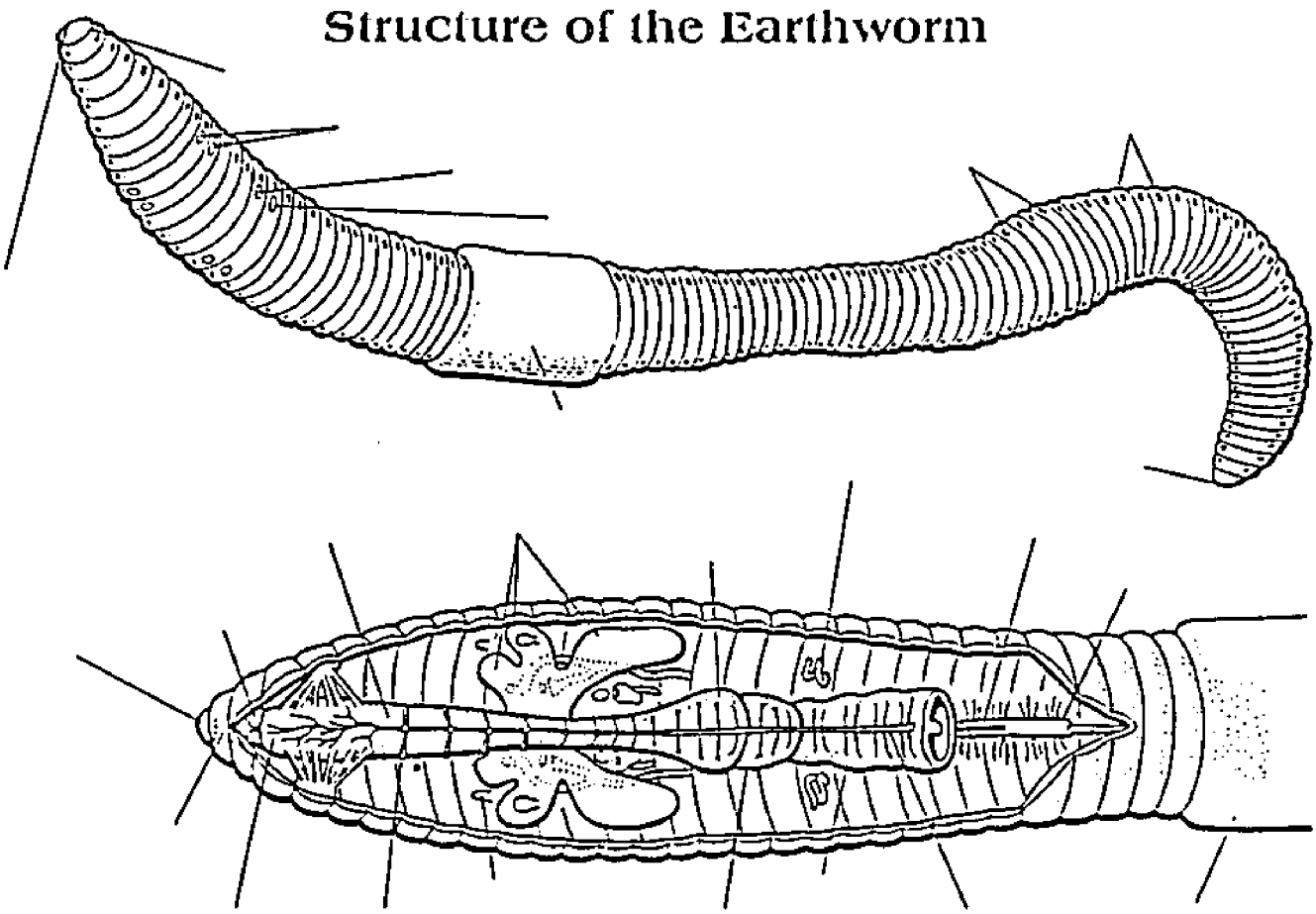
APPENDIX I

DIAGRAM AND WORKSHEET

APPENDIX I

DIAGRAM AND WORKSHEET

DIAGRAM



WORKSHEET

Earthworm

1. The three animals studied in this chapter are _____, _____, and _____.
2. Define digestive system. _____
_____
3. What is the function of an enzyme? _____
_____
4. Earthworms get rid of undigested waste through the _____.
5. An earthworm breathes through its _____.
6. The heart and blood vessels make up the _____ system.
7. An acre of land may contain _____ earthworms.
8. An earthworm has _____ hearts.
9. _____ remove liquid wastes from the blood.
10. In earthworms the testes produce _____ while the ovaries produce _____ or _____.
11. The earthworm can respond to stimuli because it has a _____ system.
12. Because earthworms have a habit of coming to the surface at night, they are commonly called _____.
13. Explain how the digestive system of an earthworm works.
_____
_____
14. Hemoglobin in the blood combines with _____.

APPENDIX J

VOCABULARY QUIZ

APPENDIX J

VOCABULARY QUIZ

Chapter 16

_____ 1. Place where food is ground up by the action of strong, muscular walls.

_____ 2. A dissolved compound which combines easily with oxygen.

_____ 3. Place where digested food is absorbed by the blood.

_____ 4. Liquid part of the blood.

_____ 5. Male reproductive cell.

_____ 6. Female reproductive cell.

_____ 7. A skeleton on the outside of an animal.

_____ 8. Tiny openings on the outside of a grasshopper.

_____ 9. Young grasshopper.

_____ 10. The passage of an insect or other animal through several life stages.

_____ 11. Backboned animal which spends part of its life in water and part on land.

_____ 12. Upper chamber of a frog's heart. It collects blood returning to the heart.

_____ 13. Lower chamber of a frog's heart. It pushes blood through vessels to the lungs and other body parts.

_____ 14. Storage area for wastes.

_____ 15. A blood vessel that connects an artery and a vein.

_____ 16. An organic waste which contains nitrogen.

_____ 17. Compound produced by endocrine gland.

_____ 18. Organ that produces hormones.

_____ 19. Muscular movement of the digestive tract.

_____ 20. Substance that helps break food into smaller particles.

APPENDIX K

CHAPTER QUIZ

APPENDIX K

CHAPTER QUIZ

1. The Kingdom we are now studying is the _____ Kingdom.
2. The scientific name of earthworm is _____ _____.
3. The earthworm is a(n) (vertebrate, invertebrate).
4. T or F. The earthworm has a respiratory system.
5. Define hermaphroditic.

6. a) Put in the correct order, from the first to the second opening (1-7).

   a) _____ intestine
      _____ pharynx
      _____ gizzard
      _____ anus
      _____ mouth
      _____ crop
      _____ esophagus

   b) These structures all belong to the _____ system.

7. The earthworm has _____ hearts.
8. Define hemoglobin.

9. The male reproductive organ is the _____.
10. The female reproductive organ is the _____.
11. Ova is another name for _____.
12. Where is the earthworm's nerve center located?

_____

13. Define excretion.

14. The earthworm gets rid of carbon dioxide through its _____.

15. The liquid part of the blood is the _____.