Andrew B.T. Gilbert UNHEARD STRUGGLES: CASTING A NEW LIGHT ON LOWER TRACK ISSUES AND CULTURAL IDENTITY IN A RURAL SCIENCE CLASSROOM. (Under the direction of Dr. Randy Yerrick) Department of Science Education, July 1998.

The purpose of this study is to come to a better understanding of the issues and events taking place within a lower-track science classroom. The study focuses on interactions between teacher and students, teacher/student belief systems, typical lower-track science experience, cultural aspects, and effects of tracking. These categories emerge and evolve throughout the study.

The classroom used for the study was a lower-track Earth Science class, taught by a twenty-year veteran teacher. The data collection methods included participant observation, student/teacher interviews, and focus group sessions. Data were transcribed from audiotapes for analysis. A group of seven students were selected to participate in the individual interviews and focus group sessions. These methods served to inform the researcher about key issues occurring in a rural lower-track science class.

Findings indicate a discrepancy between what teachers and students believe they "need" from an Earth Science class. However, belief systems are only one aspect of the complex issues that interact in the lower-track classroom. Issues of cultural and social membership play enormous roles on the actions and choices of students enrolled in the lower-track classrooms. These actions can include resistance to the official school ethos, lack of achievement, alienation and other responses that associate students with a marginalized sub-culture within the school. It is important to note that the intention of the researcher is not to victim blame the participants within the study. Students and teacher both enter the classroom with certain agendas and each are players in deciding

what takes place during instruction. Implications for educators include the importance of understanding issues pertaining to sub-cultural identity, alienation, and resistance which students bring with them when they enter the classroom. Only in this light can educators understand the profound impact that tracking decisions have on the lives of students.

UNHEARD STRUGGLES: CASTING A NEW LIGHT ON LOWER TRACK ISSUES AND CULTURAL IDENTITY IN A RURAL SCIENCE CLASSROOM

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UNHEARD STRUGGLES: CASTING A NEW LIGHT

ON LOWER TRACK ISSUES AND CULTURAL IDENTITY

IN A RURAL SCIENCE CLASSROOM

by
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For those who struggle in silence -

"If there is anything that we know for sure in the world of education, it's that teachers will get just what they expect from students"

- Johnnetta B. Cole

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Comma Man thanks you. 3) Dr. Helen Parke for all the confidence you have in me and for taking time out of your amazingly busy schedule to work on this manuscript. 4) My advisor, Randy Yerrick, whose relentless work ethic and incredible insight made this entire project possible. I've never met a professor who works harder or cares more about his students and colleagues. He is a powerful colleague and a better friend. There are not enough words to describe the efforts he has put into this endeavor. Thanks for all you've done for me.

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CHAPTER ONE - UNDERSTANDING THE ISSUES

Introduction

I first became interested in the issues that center around lower-track education, when I was assigned to a ninth grade Earth Science position in a large high school in Northern Virginia. I taught 5 sections of Earth Science throughout the day, three sections of team-taught lower-track classes, the other two sections were gifted and talented. These lower-track students were the only students in the high school that were teamed (the team was referred as School Within A School). The official reason for this team's existence was to help these kids make the transition from middle school to high school more easily. However, most of the students would ask, "Why did they make a team of stupid kids?" and "Why are we the only team in this school?" I also noticed the first day that there was an enormous discrepancy in the racial balance within these classroom sections. My first three classes of the day were approximately 90 percent minority, conversely, my other two sections of gifted and talented, were 90 percent white. It was as if students were selected by race for their placement into high and low track levels.

I continued teaching in this capacity for three years before deciding to attend graduate school. After my first year of graduate school, I chose a thesis topic that dealt with the very issues I had to deal with as a teacher. Like most researchers, I believed that my research was incredibly important; therefore, I believed numerous journals would deal with the ideas behind my research. However, the more I looked, the more I realized how little journal research is devoted to issues that effect lower-track classrooms. On one

of many trips to the library to look for research journals that dealt with research pertaining to lower-track classrooms, I came to the realization there were no journals that dealt solely with lower-track classrooms. It struck me that East Carolina University, a university with a reputation of turning out large numbers of quality teachers each year, would have so little information on this increasingly important topic. Conversely, there were eight separate journals dealing solely with "gifted education." The discrepancy in published research may suggest that "gifted education" is deemed a more worthy undertaking, evidenced by the volume and availability of journal research on the topic. According to our university library, the education of "gifted students" has a higher priority and importance when compared to lower-track students.

National Reform Efforts

The National Science Education Standards (NSES) call for the United States to set a goal of all students becoming scientifically literate (NRC, 1996). This national vision aims to prepare students for life in the 21st century by helping future adults make better, more well-informed decisions on scientific issues that will affect societies future (NRC, 1995). The NSES give education professionals a detailed view of the direction in which scientific teaching must go if we are to make scientific literacy for all a reality and not just another goal that is forgotten with the next science education reform. In addition to redefining teaching and learning science, these standards challenge the notion of students as empty vessels that are to be filled with scientific truths. The standards discuss

several changes in teaching methods including views on the nature of science, inquiry, obtaining knowledge, assessment, and the communication of ideas.

The NSES also pose significant challenges to the status quo, in every lower-track classroom in America. In light of the recent recommendations of the NRC (1995), the difference in quality of teaching between upper and lower-track classrooms has become an important issue. Further, these differences fall along economic and cultural lines. Thus, Reformers desire scientific literacy for all students, not just those who are deemed to have great potential and intelligence:

> Science is for all students. This principle is one of equity and excellence. Science in our schools must be for all students regardless of age, sex, cultural or ethnic background, disabilities, aspirations, or interest and motivation in science, should have the opportunity to attain high levels of scientific literacy (NRC, 1996, pp. 2).

Accordingly, lower-track classrooms should exhibit certain characteristics that convey scientific literacy, meaning students should be enculturated to the ways scientists think, act, and speak (Lemke, 1990; Kennedy, 1998). Some of the arguments made for the establishment of scientific classroom communities include, both students and teachers:

- engaging in problem solving,
- becoming familiar with modes of scientific inquiry and,
- understanding the nature of science.

How are these characteristics expressed in the classroom? 1) To engage in problem solving, scholars have argued that students need to question an issue that is connected to their lives in some manner. 2) When students learn multiple sides of a particular issue and begin to determine ways to investigate the problem further to achieve a solution, it requires students to become familiar with the modes of scientific inquiry. Students need

to set up certain experiments and collect a viable data set. 3) Using this data set, students will generate alternative models or solutions from their collected data and share these ideas in a public forum. This public debate will serve to facilitate students' construction and evaluation of scientific arguments based on data (NRC, 1995). Students will then become familiar with the processes professional scientists use to solve problems, helping students gain a better understanding of the true nature of science.

The NSES warn these objectives should be practiced by both "advantaged and disadvantaged" students, so as not to widen the gap between these two groups:

> In particular, resources must be allocated to ensure that the standards do not exacerbate the differences in opportunities to learn that currently exist between advantaged and disadvantaged students (NRC, 1995, pp. 20).

The NSES speak directly to the differences that exist between upper and lower track classrooms. Thus, educational issues are recast in the light of helping <u>all</u> students, despite socio-economic status, race, or level of intelligence, become scientifically literate.

Lower Track Classrooms

Evidence illustrating the differences in the teaching and learning of lower-track science students is well documented in the literature (Ogbu, 1978; Oakes, 1985; Page, 1991). However, differences between students are only painted with broad-brush strokes in reform. Focus of reform rhetoric is to: "not exacerbate the differences between advantaged and disadvantaged students."

The results of past reform efforts and characteristics of lower-track science classes have been well-documented. These differences in the typical lower-track classroom include:

1. student's beliefs
2. goals
3. treatment of knowledge.

Tracking is generally defined as the widespread practice of dividing students into instructional groups based on the criterion of assumed similarity in ability or attainment (Oakes, 1985; Eckert, 1989). When the impact on students' social development and academic abilities are considered, the perceived differences in track levels lead to arguments for and against tracking. Fairness is a centerpiece of one argument central to school's successful maintenance of tracking structures. Proponents argue that bright students are held back when not with other bright students and lower-track students increase self-esteem when ability grouped. They believe students learn better in homogeneous groups, but have little evidence to support such claims. Conversely, opponents of tracking argue that it is a system which unfairly labels students and makes it nearly impossible for them to succeed (Page, 1991). Many students have unique needs and educators may make incorrect assumptions about what those students "need" or "can do" in the classroom (Oakes, 1985). Central issues like these are judgements made by all involved, but upon what are we basing these assumptions?

Recent research challenges educators' assumptions that schools adequately assess student abilities or that schools are able to devise instruction to match broad assumptions made about these students. For example, there are many problems associated with

tracking assumptions, and ethnographic research is explicating important differences in lower-track students. The expectations teachers have of lower-track students are quite different from those of upper-track students. These expectations are manifested in teacher beliefs concerning, but not limited to stereotypes of student ability and differentiated curriculum (Oakes, 1990).

Teacher beliefs about lower-track students greatly affect the nature of classroom instruction, consequently defining and sustaining the character of the lower-track classroom. Many lower-track teachers use the classroom to enact beliefs that science classrooms should be fact driven rather than inquiry based. This structure gives the teacher a distinct advantage of power and authority over students in the classroom (Lemke, 1990), which is useful for maintaining discipline. Page (1991) argues that teacher beliefs and student challenges to authority have strong influences in lower-track science classroom instruction:

> Accordingly, teachers expect 'trouble' and therefore emphasize discipline with lower-track students, but they expect regular track students to be 'good' and, consequently, emphasize academic progress (pp. 33).

Thus, common implicit teacher beliefs in the lower-track environment can greatly effect teacher-student interactions as well as typical classroom activities. If teachers believe students are low ability they will likely accept a lower academic standard within the classroom and emphasize non-educational goals. Oakes (1985) argued further that certain teacher beliefs correspond with lower-track placement:

> ...learning goals were distributed among track levels. We found in most of the classes we studied that students in different track levels were expected to learn different kinds of behaviors that were not

actually related to the subjects they were studying (pp. 85).

Teacher beliefs are an important part of this context because they tend to reinforce myths that these students "need" certain special skills that are not important for upper-track students. Lower-track teachers typically consider teaching their students to be 'less outspoken' or to 'take a directive order and act upon it' as their top goals for students, while upper-track teachers tend to have more academically oriented educational goals for their students (Oakes, 1985). This leads to a completely different set of goals for a teacher of lower-track students when compared to teachers of upper-track classrooms.

Reproduction of Social Class

The inequity in teaching that exists in the various track levels is well-documented. Yet, the practice is widely accepted because it is believed to be in the best interest of the students (Oakes, 1985). It is of even greater concern that these differences generally fall along racial, economic, and cultural lines (Ogbu 1978; Delpit, 1988). In many lower-track programs poor and minority students are over represented, while white middle-class students are under represented. Conversely, there is a strong correlation between middle class students in upper level classes (Oakes, 1990). The result is that while whole school segregation has receded, it has also been repackaged into segregation at the classroom level (Jeter, 1998). Therefore, many argue that curriculum differentiation in schools reproduces the unjust socioeconomic differentiation characteristic of wider society (Page, 1991).

Scholars argue that tracking is but one way schools determine the levels of social reproduction within the United States school system of today (Bowles and Gintis, 1976; Bourdieu and Passeron, 1977; Solomon, 1992). Schools serve to sort students into various societal positions based on their successes or failures during their school career. Tracking serves as a highly efficient mechanism to deliver students into their so-called proper place within society (Anyon, 1981). Rosenbaum (1976) argues that the implicit reasons supporting and propagating tracking is:

> ...neither just an educational curriculum for enhancing student growth nor an organizational plan for promoting efficient school operation. Rather, it is a societal institution whose ultimate justification lies in its effectiveness for meritocratic allocation of students into societal positions (pp. 82).

However, teacher expectations and differentiated curriculum can play a large role in maintaining and sometimes exacerbating the differences between upper and lower-track students. With this in mind, any societal placements made through tracking are inherently unfair and non-meritocratic. Eckert (1989) exposes how track placements that occur at the elementary school level can increase students' negative attitudes towards school as they progress through high school. Students who are labeled high or low ability become associated with corresponding high and low achieving peer groups. These peer groups incorporate aspirations into their identities that take on a relevance to future adult status. Like Anyon (1981), Eckert observed that mainstream children who were socialized for limited leadership in early education expanded on those skills in high school. Conversely, students who have been marginalized throughout their school careers react by rejecting the entire context of school itself. Eckert determined that tracking enculturates students to a particular societal position early in their academic

careers and those roles are even more evident when defined in the context of high school. All the while, students are convinced that their track placement is either their own fault or their own choice. Often lower-track students' rebel against the system that has stripped them of their only power and taken away their opportunities.

It is obvious that tracking effects the societal position of students. Why is it that poor and minority students are so over represented in lower track classrooms? Micheals and O'Conner (1990) claim that schools favor a particular discourse in the classroom, which is usually the criteria for what counts as the proper way to take part within the classroom context:

> ...teachers often work with discourse expectations that are personal and implicit, privileging those students who share the same set of interpretive strategies and discourse assumptions as the teacher. If you don't come to school already controlling elements of the discourse, it never gets unpackaged for you (pp. 24).

This notion of privilege illustrates one mechanism, which accounts for the disparate numbers of minority students in lower-track classrooms. This mechanism is biased in favor of those students who come to school with a command of the dominant discourse of middle class, western, mainstream culture.

The typical student in the lower-track classroom does not share the implicit discourse rules that are prevalent in upper-track students. Thus, their ability to communicate within the abstract, authoritarian language of science becomes nearly impossible. Lemke (1990) describes the importance of understanding the rules of scientific discourse:

> Mastery of a thematic pattern, large or small, means being able to mobilize a system of semantic relationships to talk your way through

> a task. And that we do almost entirely by means of language, by 'talking science' (pp. 98).

This requires students to have mastery of the dominant discourse and then apply and use it in different ways to solve an abstract problem. Many lower-track teachers do not provide students experiences with the rules of scientific discourse, so science subject matter remains alien to the students experience. Thus, when placement decisions are made according to mastery of a dominant discourse, coupled with Eckert's (1989) progression of lower-track students' attitudes toward school, we can quickly see that tracking is anything but meritocratic.

Purpose of the Study

The nature of the NSES has made the issue of scientific literacy important to all students, especially those students who have already been tracked according to assumptions concerning their ability in school-based discourse. In order to facilitate instruction in lower-track classrooms, we must do our best to understand their needs, beliefs, and the role science discourse plays in the lower-track classroom setting.

The preceding discussion introduced ideas about the nature of the science education reform movement, lower-track classrooms, and social reproduction that results from tracking in general. This study will focus on a lower-track 11th and 12th grade classroom in rural eastern North Carolina. It is not the intention of the researcher to paint students as victims or to blame teachers for events taking place in lower-track classrooms, rather the purposes of the study are: 1) To explicate differences between student/teacher beliefs in a lower-track science class; 2) To examine cultural forces that

help to define differences between student views and the views of the official school ethos; 3) Lastly, and to describe how marginalized and alienated students respond to school agendas which conflict with student's self-defined roles.

CHAPTER TWO - LITERATURE REVIEW

My Experiences as a Teacher

In my three years of teaching, in lower-track classrooms, I developed and refined my approach until I formulated methods that I believed were successful in reaching my lower-track students. My understanding of students was based largely on my own memories of the high school student's experience, my interactions while teaching, and three years as indoor and outdoor track coach. These ideas were created from personal instincts about what students needed and wanted from a science class as well as issues of respect between teacher and students. My teaching philosophy was based upon two central ideas: 1) students need to have a vested interest in their own learning; and 2) students will perform better (academically and behaviorally) when they are immersed in a positive caring environment.

It is important to note that there were many times I struggled with these students as well. Despite my best efforts, I often failed to interest or motivate my students in my classroom. I also believed that my students were dealing with issues that were far more important to them then most Earth Science topics, such as growing up, dealing with issues of violence, and other aspects of teenage life in the nineties. My lower-track students were a challenging group of students who tested my abilities (as a teacher) in the classroom on a daily basis.

My daily efforts in the classroom centered on integrating these main goals with the content of the Earth Science curriculum. In order to achieve the first goal, of my teaching philosophy, students would gather data concerning a problem within the

community or in within their realm of daily experience (seasons, weather, stars, etc.). The next step would then be to make interpretations and possible solutions to explain their data.

The second goal was achieved through numerous hours of coaching track, attending extra-curricular activities, listening to students, believing in students abilities, and generally treating students with the same respect I gave my colleagues. It was amazing to see how important it was for students to have a teacher attend activities that take place in their lives. Many students would give me schedules to these extra-curricular events and attending allowed me to meet with them and their parents outside of the walls of the school. These informal meetings created rapport with students, while simultaneously lowering discipline problems and increasing instructional time in the classroom. This style of interaction gave me a large measure of classroom success within the eyes of the school administration, and parents, but most importantly it was successful with my students.

I developed this philosophy from my own understanding of students and my own personal understanding of how people learn. It was not until I began graduate school that I began to discover why some of my techniques were successful in the classroom. I feel fortunate to have developed a strategy that my administrators and students bought into and believed in.

The Gap between Teachers and Researchers

I was extremely unfamiliar with educational literature when I left my undergraduate program. It was not important to me as a teacher to read research, so like other teachers I was left to my own devices and beliefs when I entered the classroom. I believe that this lack of teacher knowledge about research creates problems in the classroom because it severely limits the teacher's ability to do research within his/her classroom. Thus, it is my belief that there is a tremendous lack of teacher voice within educational literature. This lack of teacher voice has a tendency to devalue the worth of literature teachers do read because they feel that researchers are distanced from the problems taking place in the classroom.

In the case of lower-track classrooms, there exists a tremendous amount of research dealing with the complex issues surrounding culture, social identity, race, social reproduction, and science. Unfortunately, many of these pieces lack the teacher voice due to the incredible amounts of time needed to carry out a cultural study. However, there are some exceptional examples of teacher/researchers doing research within the classroom setting. This gives evidence for the importance of understanding both research and the teacher voice when studying problems in education.

Successful teachers at any level are those who have learned to talk in the context and lives of their students, allowing them to understand the values and approaches to knowledge that their students subscribe to (Micheals, 1985; and Lemke, 1990). Ballenger argues teachers familiarity with cultural and linguistic patterns is central to understanding science in the lives of minority students:

> Talking effectively in order to manage the behavior of a classroom of haitian children, or of black children in some cases, arguably involves taking on a view of proper behavior and individual responsibility different from the middle-class assumptions held by many teachers. Values and ways of feeling, acting and relating are involved as well as linguistic patterns (pp. 1).

The idea of recognizing linguistic patterns and values that are different from the middle-class mainstream discourse held by most teachers becomes an issue central to the interactions taking place in lower-track classrooms. Gee (1989) defines discourse as:

> A socially accepted association among ways of using language, of thinking, acting, and of valuing that can be used to identify oneself as a member of a socially meaningful group or "social network" (pp. 18).

Classrooms are places where students operate within the desired discourse. However, if students do not master the accepted discourse and no one takes the time to explain the rules of the discourse to students, the classroom can become an extremely frustrating and disempowering experience.

Micheals and O'Conner (1990) describe the three most important aspects teachers must incorporate into their teaching to have success with students who are unfamiliar with the dominant middle-class discourse patterns,

1. "Discourse space must be created whereby divergent viewpoints, experiences, and ways of speaking come into contact in a structured, teacher-orchestrated dialogue. The discourse becomes their own".
2. "Teachers require students to generate knowledge on their own. The typical relationships between teacher and students with respect to authority and control over knowledge is altered in these discourse spaces".
3. "There is explicit talk about talk, and explicit, teacher scaffolded practicing of the discourse (pp. 23)".

The teachers role, in this type of classroom, is one of transforming the rules of discourse and making those rules available to all the members within the class regardless of

background or ethnicity. Teachers like Ballenger, and O'Conner had a large measure of success (teaching science) dealing with language minority students due to their understanding of discourse and how students need the rules of the accepted discourse modeled for them.

Discourse of Science

How do all these aspects effect the instruction of a typical science class? Does the nature of science itself privilege certain members within the classroom? What does this discourse look like and how is it different from other discourse strategies? This requires a more in depth discussion of what it means to "talk science", and how science is different from other areas of study. Once again, teachers need to make a concerted effort to explain the rules of discourse, especially to students who do not come to class already prepared to operate within the discourse of science. In order for students to be successful in this endeavor they must have control over the use of language and the thematic patterns that are intimately linked with the scientific processes of conjecture and refutation. Lemke (1990) develops the notion of learning to "talk science" through the idea of thematic patterns, and how students make sense of those patterns:

> A thematic pattern is a way of picturing the network of relationships among the meaning of key terms in the language of a particular subject...They are constructed by our speaking or picturing, constructed through our use of words or other signs (pp. 98).

Lemke believes that to effectively teach science (inquiry) we must teach the use of conceptual systems through language. This linguistic perspective help educators see the

vast importance that ability within a discourse can give certain students an extreme advantage in their ability to do science.

How is Science Different?

Most subjects are taught as mastery of certain sets of relationships or meanings of key terms, or in other words mastery thematic patterns. How is science fundamentally different? Lemke (1990) systematically demonstrates how science is taught quite differently from other subjects:

- Science teaching contributes to the mystique of science, where educators reinforce "findings of the experts" making scientific knowledge claims out of reach of students.
- "The truth of science is a special one, contrary to common sense and accessible only to experts."
- There is only one way to talk science correctly.
- Science as authoritative, "Students are taught that there are facts, plain and simple, and not to be argued with."

Most of Lemke's (1990) determinations center on the idea of science is authoritative and students have no stake in creating their own scientific knowledge claims, rather they must accept the word of the "experts." Perkinson (1993) corroborates these ideas of science as authoritative stating:

> Students must accept the statement as true because some authority (whatever it may be) says that it is true. Now, much can be said against authoritarianism in education; the most important criticism, however, is that authoritarianism prevents the growth of knowledge. Any knowledge justified by an infallible authority cannot be criticized, hence, cannot be improved (pp. 50).

Thus, making science authoritative is counter-productive to the creation of knowledge. This perspective highlights reasons that students, especially those without mastery of the dominant discourse ability, have difficulty mastering the thematic patterns that are associated with science education.

The next section highlights issues that pertain solely to the dynamics that exist within lower-track classrooms.

Lower Track Classrooms

It is contested that American schools sort students according to preconceived ability (Oakes, 1985; Page, 1991; Wheelock, 1992). Yet this is a characteristic of schools rarely discussed or contested. Wheelock (1994) argues:

> Across the terrain of American public schools, some organizational practices are part of the background landscape, taken for granted, rarely questioned. Among these are practices that sort students into separate groups for teaching and learning according to their perceived academic ability (Wheelock, 1994, pp. vii).

This quote exposes the process of tracking as a highly accepted, and rarely questioned phenomena that occurs daily within the public school system. Other researchers have defined tracking as a more political approach to social reproduction within our public school system. In this form, tracking is considered an action by the school to classify and separate students determining the amount, quality, and value of the education those students receive (Oakes, 1985; Oakes, 1990; Page, 1991; Rosenbaum, 1976). These differences in quality of education and stereotype stigmas that go along with tracking can create life-long problems for these students (Rosenbaum, 1976; Wheelock,1992).

If these processes can negatively affect these children, why is tracking so widespread and accepted throughout the United States? Oakes (1985) is one of few researchers who explicates and challenges the assumptions that most educators believe about the tracking process:

1) students acheive better in academically similar groups,
2) slower students develop more positive attitudes when not in contact with brighter students,
3) students earn their meritocratic placement through fair and accurate means,
4) teaching is easier when students are grouped homogeneously.

Oakes argues each of these four assumptions were unwarranted and unproven through previous research on tracking, as well as her study of tracking in twenty five schools. These assumptions are created and maintained by schools, administrators, teachers, as well as students, resulting in the widespread acceptance of tracking processes because they are thought to be in the best interest of the students. However, Dauber et al. (1996) warns about creating these types of unequal educational opportunities for tracked students:

> The development of these disparate educational "products" can be traced back to early elementary school, when students begin to carry along permanent academic records. These early records mark the beginning of educational trajectories that eventually diverge and lead to different levels of educational and occupational attainment (pp. 302).

This demonstrates that lower-track students are dealing with a systemic problem beginning quite early in their educational careers.

It is important to note that schools do not systematically sort students to various track levels, in ways that are patently racist or discriminatory. Schools do not make a concerted effort to reproduce social class within their school, the problem is much deeper

and in many ways students and parents play a role in the tracks to which students are enrolled. Oakes and Guiton (1995) defend this position:

> All students were given choices about their elective courses. Perhaps low-income students were less confident about their ability to manage difficult courses. Or they...may have seen vocational courses as providing them with a safety net from joblessness...schools seemed to accept these choices and only rarely pressed low-income and minority students to stretch beyond their own or others' low expectations (pp. 29).

Schools, students, teachers, and parents all play a part in the processes behind tracking including, expectations, and decision making. Schools are a major part of the problem; however, it is unfair to blame all the problems associated with tracking on the schools themselves. Unfortunately, the NSES does not make any specific mention on how these standards plan to confront or alleviate any of the issues related to student placement within track level.

Later sections of this chapter will explain how the role of society, and social identity impact the processes and outcomes of tracking in schools.

Lower-Track Student Sub-Culture Identity

Student placement within track level becomes a vital question when we consider the unequal distribution of minority populations. Lower-track classroom settings typically contain large percentages of minorities when compared to the percentages of non-minority students in higher level classes (Hopkins, 1997; Kunjufu, 1985; Oakes, 1990; Ogbu, 1978; Solomon, 1992). Due to the disproportionate representation of minority students in lower-track classrooms, certain attitudes and value systems become marginalized in school. The typical lower-track social group response is to develop a sub-

culture that, "creates cultural space or openings in the dominant culture of the school" (McLaren, 1994). Thus, for students to gain power within the lower-track social grouping the must become members and buy into the value systems of the sub-culture of the lower-track students (Eckert, 1989). An unfortunate by-product of membership within this group is that once students are associated the lower-track sub-culture they are rarely promoted into higher tracks. Thus, placement in lower-track classes can trap members of the lower-track sub-culture, despite their achievement within the lower-track classroom (Mehan, et al., 1996).

Gaining Membership

How do students' gain membership into the lower-track sub-culture? "The process of identity formation is a reiterative process which produce a continual repositioning of an individual as either self or other in a range of contexts" (Soudien, 1998). Students operating within the sub-culture go through a continual and dynamic process of determining their identity and their status among the group. Membership in one particular sub-culture, which has been extensively researched, is the creation and evolution of identity in black students. Schriver (1995) argues this process includes:

1. Pre-Encounter- Person views world from a white perspective and denies/devalues blackness in thinking, actions and behaviors.
2. Encounter- Person encounters significant events of discrimination because of their race, which makes them question their original white perspective.
3. Immersion/Emersion- Person evolves from old frame of reference to a new black identity. "This stage involves immersion in "blackness" through intense attachment to elements of black culture and withdrawal from interactions with other ethnic groups."

4. Internalization- There is a decline in anti-white feelings coupled with the person achieving security and confidence with their black identity (Cross, 1971; Schriver, 1995, pp. 136).

Students of lower-track sub-cultures travel through these stages throughout their experiences within the tracking systems. The pre-encounter and encounter stages can be evidenced in the progression of black children during their elementary school years. Kunjufu (1985) exposes this problem with his "fourth grade failure syndrome," where black students enter school quite enthusiastic and trusting of their teachers (pre-encounter). This stage is followed by students realization of their continual marginalization, by the school system, where their typical recourse is to rebel against the official school ethos (encounter). Harry Morgan supports this notion:

> Upon entering school in primary grades, black children possess enthusiasm and eager interest; however, by fifth grade the liveliness and interest are gone, replaced by passivity and apathy. (pp. 53)

The process of black cultural identity is an important issue in lower-track classrooms due to the disproportionate numbers of black students who are placed within the lower-tracks.

However, issues within the creation of sub-culture identity are not just issues of race. No longer, are the politically derived terms of racial identity stable, and secure. Rather, we need to create a broader conception of identity that challenges the notion of that identity is tied strictly to race. These new conceptions will take into account that identity of self is a historical, and cultural formation that is shaped through complex interactions between diverse communities (Fraser, 1992; Giroux, 1996). These new identities are important because reforms make grandiose claims that scientific literacy is

for all students, but reforms do not articulate strategies to overcome issues related to tracking processes. Rodriguez (1997) argues:

> In their present form, the NSES provide no arguments or compelling evidence that would encourage teachers or administrators to reflect critically on how well their students are learning, on how relevant the curriculum is, on the lack of ethnic and gender diversity in their advanced science courses, and on the socioeconomic impact of discouraging diverse learners to pursue science-related careers (Rodriguez, 1997, pp. 31).

If teachers and administrators see what they do is "working" e.g. advanced placement classes, they will see no need to implement the ideas of the NSES or any other form of change.

Student Response to Sub-Culture Identity

Lower-track students typically separate themselves from the official schooling process using specialized language, resisting school authority, alternative styles of clothing, and lack of formal school success (Eckert, 1989; Oakes, 1985; Page, 1991; Wexler, 1992; Willis, 1981). Members of this sub-culture do not buy into the official (dominate) school culture, as demonstrated by Solomon (1992):

> Subordinate groups whose culture is not consistent with the school's and therefore tend to be marginalized see these institutions as barriers to their development and actively resist their regularities, forms of knowledge, and social practices. This ethnography has shown that subordinate groups respond to these forms of domination with resistance (pp. 113).

Solomon describes that lower-track students become members of a counter culture that is alienated from the teachers and administrators, who students believe do not care about them. This alienation becomes a barrier to effective instruction within the classroom because students shut down when their alienation reaches a certain level. Student

alienation is often manifest in the belief that the school and teachers do not care about them or their success. As evidenced from an excerpt from a student interview, in Wexler (1992) concerning lower-track students views of their teachers:

> Some teachers are good. Some don't give a shit... I don't give a shit about them either...You just don't pay attention to them. If they don't care about you why the hell should you do what they want you to do? (pp. 39)

Obviously, alienation causes strong feelings within students when they perceive that teachers and schools have quit caring for them.

The lower-track student sub-culture uses resistance as a tool to gain back a measure of power that has been stripped away from them throughout their years of marginalization in the schooling process. Consequently, becoming a member of the sub-culture many times requires devaluing or complete rejection of the dominant social group of the school (Steele, 1992; Willis, 1981). Solomon (1992) demonstrates the typical student reaction to this process, "When students refuse to embrace school ethos that they perceive as acts of subordination, they are engaging in acts of resistance." The resistance stems from students not buying into the idea that they need to assimilate the dominant culture in order to be successful. As evidenced by Willis (1981), describing English working class students consistently reject dominant school views in favor of a sub-culture that does not subscribe to the typical ethos and values of the schooling process. Kreisberg (1992) corroborates this idea:

> Resistance is readily apparent in most situations of domination...Many reject the dominator's theories of their inferiority, and they resist the notion that their submission is for their own good (pp. 16).

Resistance can be characterized as students not wanting to assimilate the beliefs and value systems of the dominant culture group within the school.

In many American schools, this can be seen as black minority students not wanting to take on the dominant white social value system. Black students often chastise their black peers for "trying to be white," exhibiting their active resistance to white structure and domination (Anyon, 1997; Fordham and Ogbu, 1986). This black resistance plays a significant role in determining membership within the black sub-culture of the school hierarchy. Solomon (1992) describes the sub-culture membership:

> Black students created a sense of separateness in inter-group relations. In addition, students who embraced the black cultural identity disassociated themselves from both curricular and extra-curricular activities they perceived as white...In addition, a differential commitment to black cultural behaviors gave rise to intra-group conflicts, especially between those who strove for black identity and others who gravitated toward the white, mainstream culture (pp. 3).

The struggle that many black students face when they try to assimilate to the mainstream cultural ideas that follow the school ethos. Those students who buy into the school culture are deemed to be outside the circle of black sub-culture membership and face difficult problems of not fitting in within either the black sub-culture or the dominant white culture.

The idea of resistance is vital to the notions of the NSES, and "scientific literacy for all Americans." Schools are arenas where many multi-faceted issues intersect in a complex web of power and identity. The reforms do not prescribe any remedies for the problems associated with lower-track classrooms and the underlying issues that create student resistance. As discussed earlier, students come to school with home-based

discourses and if those discourses are not the same as the dominant school discourse, those students become marginalized throughout their school careers. This, in effect, privileges students who arrive at school with mastery in the dominant discourse. Thus, disproportionate numbers of minority students are marginalized through this process, creating a sub-culture that actively resists the dominant values of the school.

Teacher Beliefs and Expectations of Lower-Track Students

> Schools shape students both through standardized learning situations, and through other agendas, including rules of conduct, classroom organization, and the informal pedagogical procedures used by teachers with specific groups of students (McLaren, 1994, pg.191).

This quote provides evidence that schools and teachers are not passive observers of the socialization processes taking place in schools, rather they help determine the nature and extent of the socialization. Many times, teachers carry with them beliefs that can impact their level of instruction for certain groups of students. In fact, the teachers themselves provide crucial elements when defining what it means to be a lower-track student (Page, 1991). Many times tracking provides teachers with preconceived notions and hierarchical labels and expectations that are associated with particular groups of students (Oakes, 1985; Rist, 1979).

These assumptions are manifest in a variety of ways, including how teachers view the typical lower-track student. This student profile generally follows a pattern of lack of academic ability coupled with behavioral problems. This idea is supported, in the following excerpt from Page (1991):

> Thus, in interview after interview, Maplehurst teachers cite students' deficiencies, beginning with the academic but always moving to the behavioral. Thus, lower-track students "lack basic skills," are "close to illiterate," or "frustrated and can't make it academically." The littany then moves to social history: Additional needs students have "families that don't value education," are "from single parent homes," or have nobody who gives a damn about them at home." Most adamantly, however, staff members insist that lower-track students are "behavior problems" (pp. 39).

This profile is one of a student that disdains authority, resists the schooling process, and academically underachieves. It is this view of students that often allows teachers to create non-educational goals for their lower-track students ranging from taking a directive order and act upon it, to getting through the day with a smile on your face (Gamoran, 1989; Oakes, 1985; Oakes, 1990; Page, 1991). These beliefs and goals for students have a tremendous impact on the nature of interaction within the classroom environment.

This process can have profound effects on the teacher's type and quality of classroom instruction. Page (1991) argues that teachers of lower-track classrooms often expect trouble and consequently emphasize discipline in the classroom. Conversely, teachers expect upper-track students to be well behaved and consequently emphasize more academic goals for their students. Mehan et al. (1996) more clearly defines how these varying expectations impact the educational goals teachers set for their students according to track level:

> Teachers set different goals for students in different groups and tracks. High group, high track teachers more often state that they want their students to be competent and autonomous thinkers. In contrast, teachers of low-track classes more often emphasize basic literacy and computation skills and present topics commonly associated with everyday life and work (pp. 7).

Teacher expectations play a large role in all classroom environments. Unfortunately, many teachers carry negative expectations into lower-track classrooms where they stress non-academic goals reducing value of the education of the lower-track student (Gamoran, 1987). However, most teachers are not cognizant of these beliefs because of the assumptions they carry into the lower-track classroom (Oakes, 1985). Over time the lowered expectations can create large discrepancies in the levels of education given to lower-track students when compared to their upper-track counterparts.

Social Reproduction of Lower-Track Programs

The ideology of schools generally consider category affiliation or social membership a matter of individual choice (Eckert, 1989). Thus, many teachers feel that students have earned their way into a particular track level and can easily move through the various social groupings within the school environment. Eckert demonstrates this idea:

> Although members of the school community acknowledge that neighborhood and upbringing "pre-dispose" individuals to choose certain social groups, to develop certain interests, and to like or not like school, there is an implicit understanding that the school itself provides individuals with the means to make choices, and that the maturity of adolescence entails the responsibility to make the right choice regardless of childhood experience (pp. 6-7).

In light of school sub-cultures and teacher beliefs that effect instruction, it is conceivable that students have little choice to pursue their educational options.

The culture of the United States is one based on stratification and privileging where most members of society have either benefited from or been deprived by

inequality (Lewis, 1993). Thus, society itself plays a role in determining the position that these students occupy within the school hierarchy. Tracking, within our school systems provide our culture with efficient systems that maintain and perpetuate social stratification (Rosenbaum, 1976). Giroux (1988) exposes the purpose that tracking serves in a capitalistic society:

> Public schooling offers limited individual mobility to members of the working class and other oppressed groups, but it is a powerful instrument for the reproduction of capitalist relations of production and the dominant legitimating ideologies of the ruling group (pp. 12).

Ogbu (1978) and Riordan (1997) argue that students of the sub-culture identity face a low job ceiling, due to the processes of socialization. The typical response to this low job ceiling is for students to lower their aspirations to jobs that do not require a successful school career.

Thus, we begin to understand that not every student in the United States has an equal chance at the American dream. Students often have to overcome many obstacles that are not of their own making and are socialized to disassociate themselves from the official school ethos of achievement relegating them to lower positions within the societal structure. Once again, the NSES do not suggest any remedies for these problems, they merely state that scientific literacy should be for all students. More discussion and research pertaining to the issues that surround tracking processes is needed. Schools should not be places to carry out privileging and social reproduction, and reform efforts need to closely examine the widely accepted practices that create inequality within our schools.

Summary

Chapter two presents a review of the literature related to this study. Research in the area of lower-track classrooms, specifically how lower-track science instruction affects students social membership, sub-culture identity, social reproduction, teacher/student beliefs, and the discourse of science is quite extensive. The problems associated with lower-track science classrooms are complex interactions of society, identity, power, and individual/collective belief systems. The problems are complex, and will require solutions that are not prescriptive, rather solutions that will work at changing the systemic problems that are occurring throughout the instruction of lower-track students. These problems are not limited to teacher beliefs/expectations, student beliefs/expectations, science as authoritative, social reproduction, privileging discourse, or student identities, rather it is an intricate combination of all these varied factors, which has created the current situation of lower-track science.

CHAPTER THREE - METHODOLOGY

School Context

The study was conducted at Ridgemont High School, which resides in a county that includes both rural-agrarian and urban settings. The boundaries of Ridgemont encompass both of the aforementioned settings, drawing students ranging from the surrounding rural areas to a nearby town setting with a population of approximately 50,000. This stems from a 1990 decision by the local school board to racially "re-balance" the school's attendance area. The decision was made to bus kids from predominately black neighborhoods within the town limits to predominately white schools in other areas of the county. Presently, Ridgemont has a total enrollment of approximately 1380 students. The current breakdown of school population is 60 % white and 40% minority students.

On my second day of observations, I arrived at the school and knew something different was happening. There were four police cruisers parked on the grass in front of the school, with lights flashing. As I walked toward the school, two policemen escorted a black male student out of the building in handcuffs put him in the backseat and drove away. The students later informed me that this student got in a fight with several administrators over a beeper. There were several punches exchanged and the cafeteria was left in disarray from the scuffle. There is a definite feeling of unrest and discontent within the walls of this school.

Classes and Tracking

Students enrolled at Ridgemont are required to complete three years of science courses to obtain the science credits needed for graduation. Two of the three required credits must be in biology, and a physical science course. The physical science courses include physical science, earth science, chemistry, or physics. The other courses offered at Ridgemont are applied science, Principles of Technology, advanced biology, advanced chemistry, AP biology, AP Chemistry.

There are three levels of tracking within Ridgemont. These tracking levels are: General, College Preparatory, and Honors. General classes are designed for students who the majority of whom will not be attending college after graduation. General classes contain a large percentage of minority students and make up approximately the academically lower 20 to 25 percent of the school. With exception of special education classes for non-mainstreamed children, this is the schools lowest academic level within the school. College Preparatory is designed to prepare students who are planning to go on to community college or attend a four year college. The bulk of the student body falls into this category. The Honors track is an academic step higher where the workload is heavier and the class moves at a faster pace, geared to those students planning to attend more competitive universities. This serves as the elite of the student body with a small percentage of the student population enrolled in these courses. Ridgemont's tracking system is very efficient at sorting students to fit within their various track levels.

Data Collection

The classroom that served as the unit for my study was a general level earth science class taught by Mr. Smith. He is a veteran teacher with twenty years experience including the last seven years in the general level Earth Science class at Ridgemont. The typical student in this classroom is not expected to enter a four-year college level program; however, some may attend the local community college. Mr. Smith's students are juniors and seniors who need this class to complete the last required science credit in order to graduate.

I approached Mr. Smith informing him that I wanted to get to know and understand the students within the general level Earth Science class at Ridgemont. I asked him to assist me with the selection of students to incorporate into the study. He informed me that club period on Wednesdays would be a good opportunity to speak with many of the students because as he put it, "very few are in a club." Mr. Smith then volunteered to create a list of students for our study of which I added a few students from the class. The students themselves are described in depth in Chapter Four.

Qualitative Research

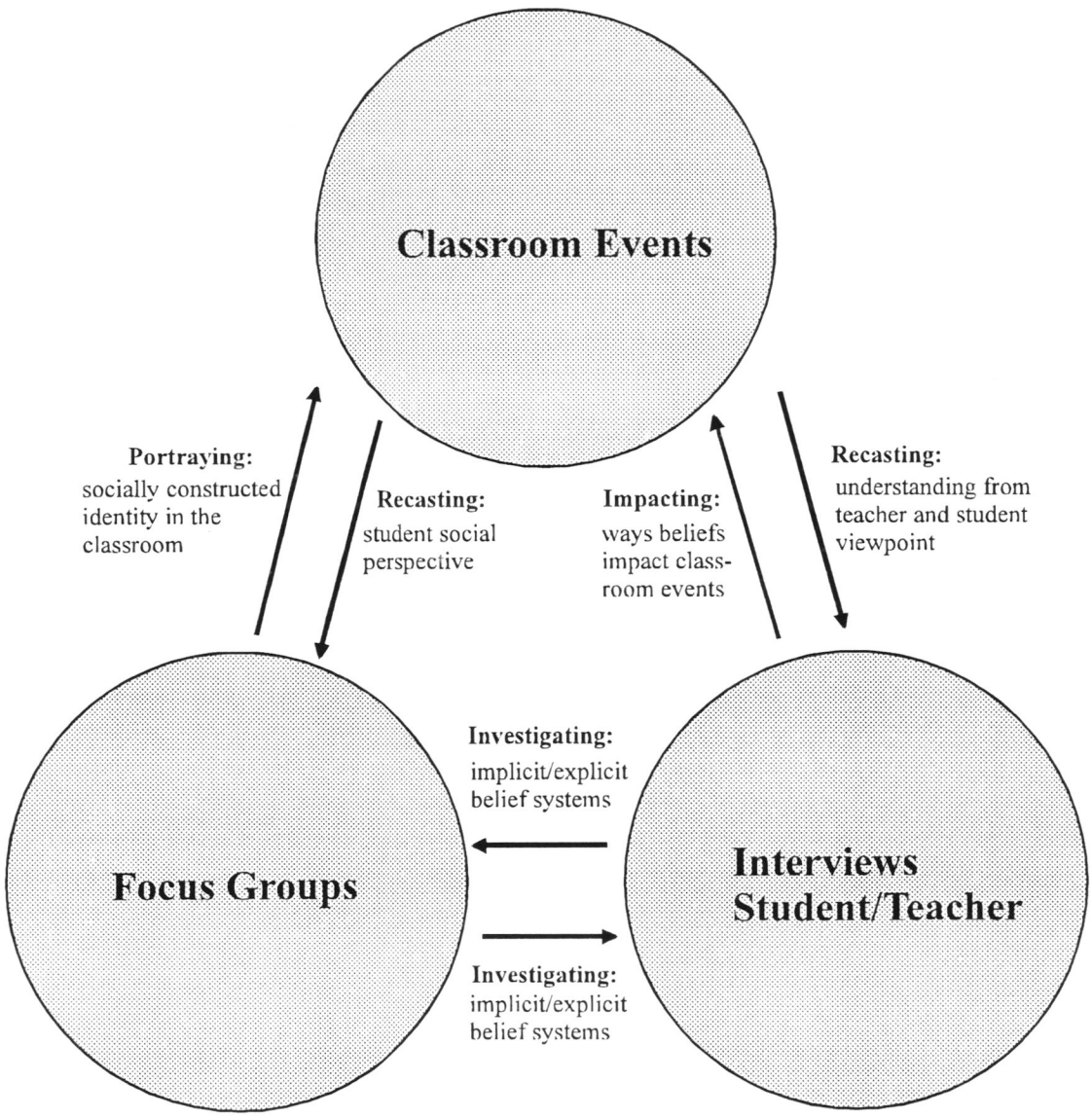
The study itself was designed and carried out using qualitative techniques that will be further described in this section. Broadly defined, qualitative research when broadly defined means, "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification." (Strauss and Corbin, 1990). Qualitative research is more effective when the purpose of a research project is to document the discourse events and interactions that took place within a social setting

(Mishler, 1986; Cronbach, 1975). These interactions could not be planned, rather each discourse event takes on a life of its own as the researcher and subjects respond to one another during the interaction. The job of the qualitative researcher is to effectively interpret and describe these interactions using rich detail to properly display the subjects experiences within the classroom setting (Lincoln and Guba, 1985; Stake, 1978). It is also essential that the researcher make these interpretations and descriptions relevant to the experience of the reader, providing them with a more meaningful experience.

To accomplish this end, the researcher gathered data on the premise that teachers and students hold certain implicit beliefs about school, which are made explicit through their actions within the classroom. In order to better understand the meaning behind classroom actions, data collection centered around three particular methods including classroom observations, focus groups, and individual interviews (See Figure 1).

Observations

The researcher was a participant observer in the classroom twice a week, for a period of four months. These observations allowed the researcher to witness events and interactions that the participants themselves were not aware of, or that they were unwilling to discuss (Patton, 1990). This allowed the researcher to witness the typical interactions between student and teacher, as well as student/student interactions. Class observation notes and audio tapes (of the observed class) were reflected upon immediately after the observation so as to accurately capture researcher feelings about


Classroom Events
Portraying:
socially constructed identity in the classroom
Recasting:
student social perspective
Impacting:
ways beliefs impact class-room events
Recasting:
understanding from teacher and student viewpoint
Investigating:
implicit/explicit belief systems
Focus Groups
Interviews
Student/Teacher
Investigating:
implicit/explicit belief systems

what was witnessed (Lofland and Lofland, 1984). After reflection, important categories were generated from the classroom interactions, i.e. teacher power, negotiating the minimum standard, alienation, etc. Events that were central to these categories were identified and transcribed for analysis, usually within one week of the original observation. These interpretations of classroom events were subjected to member checks following individual interviews and focus groups to ascertain a deeper understanding and accurate interpretation of certain classroom events.

Focus Groups

Focus group interviews were conducted weekly, over a period of four weeks, and were designed according to Kreuger's (1994) definition of focus groups. "A focus group is a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive non-threatening environment" (Krueger, 1994). The focus groups contained seven students proportionally representing a sample of the student population within Mr. Smith's general Earth science class (three black females, three black males, and one white male). There are several reasons that make focus groups an appropriate form of data collection for this group of students. In particular, focus groups are an unobtrusive research method that is respectful and not condescending to participating members. This is important when we consider that most of these students have an oppositional view toward school and school officials. They are generally from lower socio-economic class and rarely participate in school functions, evidenced by the small number of Mr. Smith's students who participate in the school's weekly club period.

According to Morgan and Krueger (1993), focus groups are especially useful when working with categories of students who have historically had limited power and influence. Thus, focus groups supplied our study with an avenue to create rapport and trust with students helping researchers to understand the collective identity and status within the group.

Individual Interviews

Interviews serve two specific goals: 1) a means for exploring and gathering experiential narrative to develop socially constructed meanings of shared experience, and 2) a vehicle to develop a conversational relation about the meaning of that experience (Van Manen, 1990; Bogdan and Biklen, 1982). Therefore, students were selected for individual interviews according to past experiences or stories that were shared during the focus group sessions. The series of focus group sessions (four) helped to build trust and rapport between researcher and subjects to facilitate students in providing substantive answers to interview questions (Eichelberger, 1989). To help facilitate this rapport, a concerted effort was made to create an equal relationship between student and researcher. I believed the integrity of the study would be compromised if students perceived a radical difference in power during the interviews, making their answers more guarded. Thus, unstructured interviewing styles were used to alleviate this potential problem, because this style creates a "conversational" interview and helps researcher and subject achieve a more equal relationship (Hitchcock and Hughes, 1987). It was vital to the study that our subjects were able and willing to give candid responses to our questions. Interviews were

a powerful way to gain insight into educational issues through understanding the experience of the individuals whose lives constitute education (Seidman, 1991).

The study called for an in-depth understanding of the school experiences of the subjects involved. Consequently, we struggled to understand the context, discourse, and meaning behind subject responses in order to develop a perspective on how the dynamics of lower-track classrooms effect their lives. Elliot Mishler (1986) challenges several research assumptions underpinning the tradition of mainstream interview protocol and research. He argues that mainstream research methods do not consider the fundamental differences between talk and behavior. Talk has structures and governing rules including culturally grounded norms, how to enter situations, what is appropriate, and how to understand what is being said. Conversely, behavior is fragmented and arbitrary, connected only through past associations that can vary from person to person. In addition, standard interviews seek to emulate survey research by treating separate question and answer pairs as single entities, rather than an individually constructed discourse between interviewer and subject. According to Mishler (1986) interview sessions (including focus groups) should be considered as a singular event with regard to context, discourse, and meaning. This study adopted this idea and incorporated it into all of our interview sessions and analysis.

Credibility and Verifiability

The researcher informed his own framework with the work of Lincoln and Guba (1985), making a concerted effort to create the most credible constructions as possible.

In this case, the naturalistic researcher assumed the presence of multiple realities and attempted to represent those multiple realities adequately (Hoepfl, 1998). These efforts centered around a number of techniques that increased the studies credibility including, persistent observation, triangulation of data, member checks, and a journal consisting of researchers reflections throughout the study.

Persistent observations were incorporated in order to maximize the time that was spent collecting data on site. Persistent observing gives depth to observations because it entails the researcher actively seeking out sources of data that were identified from the researcher's emergent categories (Erlandson, et al. 1993). These categories allowed for fine tuning of collection and analysis, while sorting out particular artifacts that supported the objectives of the study.

Triangulation of data is essential to make claims and interpretations of certain events. Many sources of data must be used to evaluate the same event or relationship, otherwise the assertions made have little credibility (Lincoln and Guba, 1985). Thus, observations, focus groups, individual interviews, and reflective journals were all incorporated to make sense of certain events within the context of the classroom.

Data Analysis

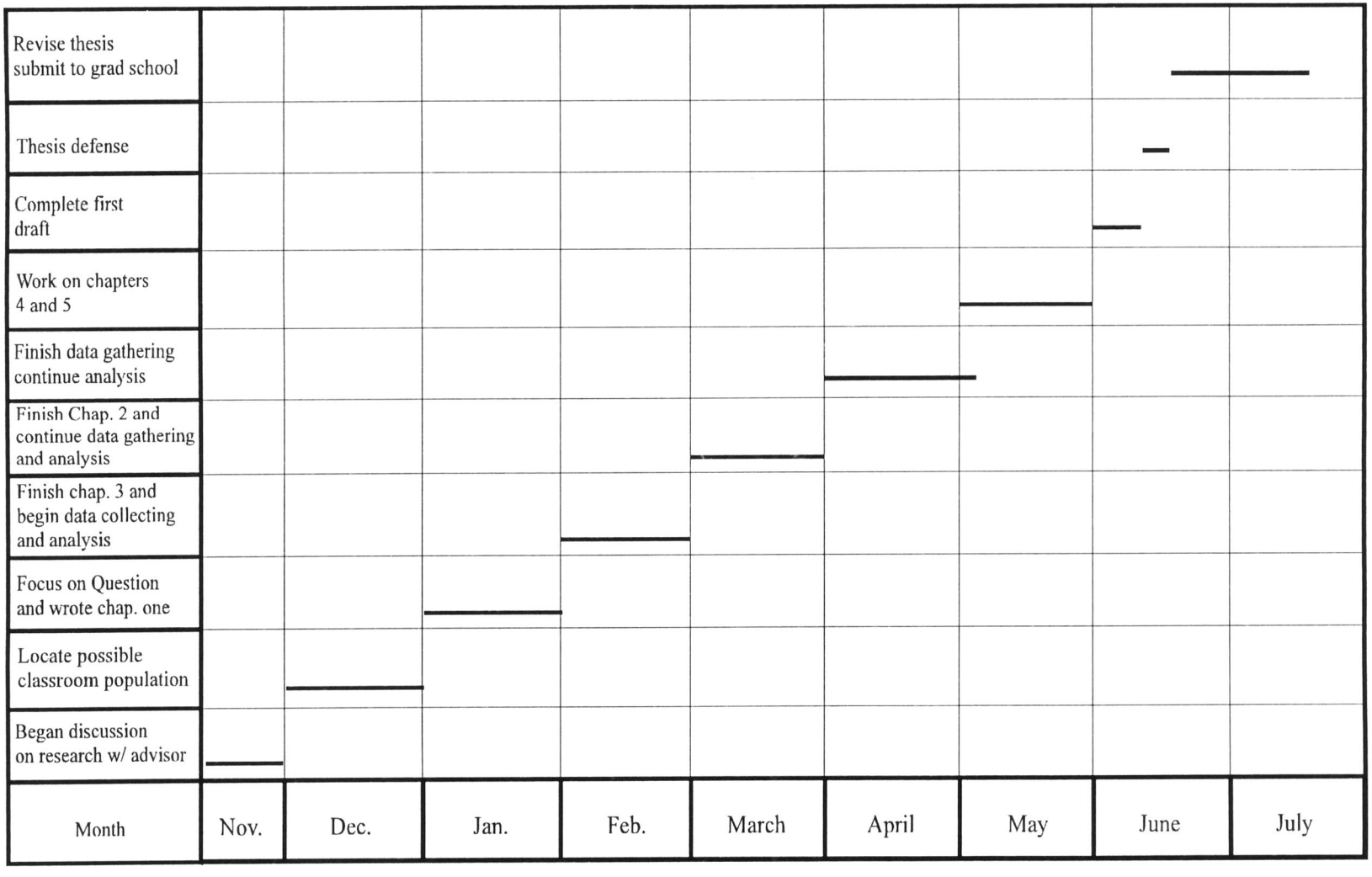
Data analysis in naturalistic inquiry involves two major aspects which include, the analysis of data at the research site as well as analysis done off site following data collection. There is an inseparable relationship between data collection and data analysis when conducting a naturalistic study (Erlandson, et al. 1993). Data collection methods

are constantly refined and reworked to better suit the strengths of the study. Thus, modifications to procedures existed throughout the project (for timeline of project, See Figure 2). The study continually moved back and forth between classroom observations, focus group interviews, and individual interviews.

Interpreting the discourse interactions of other people can often be a risky undertaking, due to the relative ease for a researcher to misinterpret another's words and intentions. This study took an ethnographic approach by re-voicing researcher interpretations to the subjects (during interviews and focus groups), who in turn reflected upon those interpretations to assure their accuracy. Thus, the researcher continually redefined interpretations throughout the study, presenting data artifacts to subjects served as a member check to increase the viability of the study.

Emergent Category Selection Process

Emergent categories were generated throughout the data analysis process and their selection varied depending on the type of data. In analysis of classroom observation data, emergent categories were identified through a process that involved analysis of copious field notes along with audio cassette recordings. Immediately following the observation, the researcher reflected on the events that took place in class noting key events (in the mind of the researcher). After reflection, field notes where read while listening to audio tapes of classroom observations to determine key events that were to be transcribed. These transcribed artifacts of data were then examined to identify certain


Revise thesis submit to grad school
Thesis defense
Complete first draft
Work on chapters 4 and 5
Finish data gathering continue analysis
Finish Chap. 2 and continue data gathering and analysis
Finish chap. 3 and begin data collecting and analysis
Focus on Question and wrote chap. one
Locate possible classroom population
Began discussion on research w/ advisor
Month
Nov.
Dec.
Jan.
Feb.
March
April
May
June
July

themes or patterns, which were categorized according to the nature of the pattern. In general, the process consisted of the following procedure: observation, field notes, transcription of class events, reflection, categorization of data, member checked, cross reference to other events, and finally rechecked categories. This allowed for complete analysis of classroom events and reinforced efforts to determine emergent categories.

The process of generating emergent categories from focus group interview sessions took on a different nature. After written reflection about a particular focus group, audio tapes were analyzed to from start to finish with researcher focusing on listening to the dialogue. The tape was screened a second time with the purpose of identifying individual subject topics that were taking place as well as the time that the topic was discussed, i.e. *prejudice in school*, 2:35 minutes to 5:56 minutes. This activity was immediately followed by a third screening (of the tape) where emergent categories were identified and transcribed, in order to sort these artifacts with the classroom observation categories (See appendices 1-4). In this instance, the process followed a pattern of: conducted focus groups, reflected, reviewed tape, reflected, reviewed tape for a second time, noted topics and times, reviewed tape for a third time, created focus group categories, cross referenced with other events, and finally challenged existing categories. Once again these steps were taken to ensure the integrity of the category selection process. It is important to note that all categories were developed by the researcher and will contain the researchers unique interpretations and insights. The researcher understands that the constructions that emerged through this practice was but one of many possible constructions of reality (Lincoln and Guba, 1985).

Emergent Categories Developed from Data

After all transcriptions were compiled (observations, focus groups, and interview sessions) in one large notebook, they were coded according to four main categories that emerged throughout the journal writing and data collection processes (discussed previously). Those four main categories were: student ability, social membership, us versus them, and science. The data that pertained to these categories were laid out on a section of poster board and sub-categories emerged from each of the four main categories. The following is a listing of the emergent sub-categories for each of the main categories:

- Ability – beliefs of ability, students beliefs of teacher perceptions, and classroom examples of teacher beliefs
- Social Membership – cultural identity, behavior and actions, life beyond school, and stuck in the class (the gatekeepers)
- Us versus Them – respect, caring, negotiation, and fight the power
- Science – classroom examples (observations), individual experiences and opinions, and socially constructed experiences and opinions.

These groupings and emergent sub-categories served as the base for the data analysis carried out in chapter four.

An audit trail was also kept to keep track of the decision making process that was utilized while generating these emergent (main and sub) categories from the data. The trail provides a detailed depiction of how and why data was broken down into

manageable chunks. It also provides details concerning how particular identifiers developed throughout the study giving a sense of context for the categories (Brown, 1996).

CHAPTER FOUR - ADVENTURES IN A LOWER-TRACK CLASSROOM

Cast of Characters

Mr. Smith – A twenty year veteran of teaching in Eastern North Carolina and has taught at Ridgemont High School for the past 13 years. He is a slim man of average height with slightly graying hair and wire rimmed glasses. He has strong beliefs concerning the ability and motivation of his lower-track students.

Livan – A tall, broad-shouldered, native-born Cuban who has lived throughout the world by way of Venezuela, Miami, New York, and now Eastern North Carolina. He arrived at Ridgemont after spending two years in the local private Catholic school. He was first enrolled in upper-level science classes, but two years of constant office visits and poor grades have landed him in general level classes.

Amy – A petite, fiery black female with long hair and a member of the schools' ROTC program. Amy seems to continually suffer from illness or injury. She dropped out of school during her junior year due to pregnancy and recurring health problems. She was enrolled in Chemistry, but upon her return to school after dropping out she has been enrolled in general level Earth Science.

Damon – A slim black male who has short shell-laden dreadlocks and dresses with typical hip-hop style. He works at a local McDonald's and hopes to buy a car within a few months. His entire focus at the present time is to pass Mr. Smith's class, which he has failed once before, so that he can graduate in June.

Jawon – A thin black male with a short fade haircut and is very particular about his appearance. He began his high school career smoking pot, getting in fights, and spending

much of his time in the office or suspended. Lately religion and helping his mother manage the family have become important aspects in his life.

TJ – The only white student among the characters; however, most students and teachers consider him to be a member of the black peer group. In the eyes of the other students in our study, "he is one of us." He is tall, thin, and wears the typical hip-hop style clothes. He lives with his mother and stepfather (his stepfather does not approve of his choice of friends). He has never met his biological father, nor does he care to.

Barb – She is a short, robust, black female with straight short hair. She has enlisted in the Navy and will be leaving for duty this summer, after graduation. Her father is quite upset that she chose the same career path as himself, mainly because he feels he won't see much of little girl anymore. She is soft spoken but headstrong and will not hesitate to tell you exactly how she feels.

This cast has been described so that the reader will be able to better identify with the subjects involved in the study. The study itself relies on the fact that students, teachers, and administrators are people not just subjects of a study. In the field of education, decisions effect human beings, not just numbers or profit margins, so it is imperative to any educational study to conceptualize an identity for the people and events we study.

Act One – The Verbal Quiz (Typical Interaction)

The students enter the room with their typical energy as they bounce from person to person and from desk to desk. The room is a flurry of shuffling people, while backpacks are simultaneously slammed down on tabletops. Some students are yelling, many are pushing and punching each other. This is a typical beginning to Mr. Smith's general level Earth Science class, made up of juniors and seniors. The class seems quite unconcerned they have a quiz and very few students are observed listening to the instructions. The students seem content to ignore Mr. Smith and take their time settling down before the quiz. Eventually, the students take their places and the show begins, as Mr. Smith shuts the door and begins to speak.

Mr. Smith: Okay, guys, Shhh! Let's get the dividers up, okay, Shhh! Quickly so we can get started. (Plenty of student talking continues while dividers are gathered and assembled) Amy, let's put that stuff away. All right, during the quiz, let's have no talking. If you will listen carefully, the main things you will need to know are the names of the large, not the small ones, but the large plates (students continually talk during the instructions). You will need to be able to refer to your notes, to understand the meaning of convergent and divergent. These are the ones we have color-coded in our notes.

Alec: (exasperated) We've got to know the names of the plates?

Mr. Smith: That's what I tried to tell you, but you took a nap for the second day in a row.

Alec: How are we supposed to study?

Mr. Smith: You have a textbook you were supposed to study.

Alec: Man, that's Bu-u-l-l-lshit!

Mr. Smith: No it's not and you can leave the room.

Alec: Man.

Mr. Smith: (as Alec is walking toward the door) You slept yesterday, as I recall.

Alec: SO! (and leaves the room)

Mr. Smith: (to class) Shhh, just listen now. Problem one or question one is a bit of a surprise, SHHH, the others are not. In number

24		one, I want you to think back to the map that you put together
25		when we started this chapter. We took a map of several
26		continents, that are in the southern part of the world and
27		cut them out and pieced them together to make one big thing,
28		that we called Gondwana or Gondwanaland. That consisted of
29		four continents and one other piece, and here's the question,
30		we'll see how good your memory is. Question one says over
31		200 million years ago Antarctica was joined to four
32		other landmasses to form one large continent that we called
33		Gondwana. Name the four other landmasses. (student voices
34		can still be heard throughout the classroom) Antarctica is one
35		of them, see if you can name the other four.
36		Shhh, Shhh!
37	Damon:	What was the question again?

The students have been asked to listen to the directions and prepare answers for a verbal quiz that Mr. Smith is trying to administer. The class is giving Mr. Smith difficulty by ignoring and talking during his introduction for the quiz (lines 1-10). One student, Alec, takes serious issue with Mr. Smith concerning the nature and material on the quiz, to which Mr. Smith reminds Alec that the quiz would not be difficult if he had not slept in class (lines 11-21). The student was asked to step in the hall so that Mr. Smith could allow him to cool down and possibly defuse what could become even more volatile. Mr. Smith regains control (somewhat) and proceeds to give the explicit directions needed for successful completion of the verbal quiz (lines 22-33). In line 37, Damon, a student who talked through all of the instructions, asks Mr. Smith to repeat his question. Mr. Smith begins to rephrase the question without hesitation.

The class and teacher continue this path of questioning and repetition for fourteen more questions of similar content, while Alec is still in the hall. Mr. Smith recites the problem, and students continually ask him to repeat the question, for each of the fifteen

questions. During the administration of the quiz, many students have put their heads down and gone to sleep. Many of the students yawn loudly, while others mock the mannerisms of Mr. Smith while he is speaking. It seems an extremely difficult task to manage this group of students who create this chaotic and disruptive environment in which to teach. Mr. Smith, however, moves through his routine and questioning quite undaunted and the general student disrespect does not seem to phase him.

Act Two – Thoughts on the Classroom

Scene One: Mr. Smith's Beliefs

Twenty years of these types of interactions may play a role in determining Mr. Smith's belief system, concerning what these students need from his Earth Science class. Mr. Smith's experiences also enable him to make definitive statements on what he believes his students are capable of achieving. These beliefs include, but are not limited to, the following aspects of his students:

- prior knowledge base
- ability
- effort
- value systems

Mr. Smith creates an agenda relevant to his experiences within his own classroom. This agenda includes: proper content, methods, student interest, and behavior. As a former and future teacher, I am sympathetic to Mr. Smith's concerns and troubles as I watch his classroom and students in action. He has created a rationale to make sense of what is

happening in his class based on his many years of experience, which he expresses in the form of wisdom or advice.

Mr. Smith repeatedly made reference concerning his students weaknesses with prior knowledge of general issues, especially those dealing with topics related to Earth Science. He expresses extreme difficulty when trying to add to their existing knowledge base:

> Um, they just have a very, very, poor background of general knowledge. And it's very difficult to add to that, when there is no basis there to add to. So all year long, we speak of Appalachian Mountains of western North Carolina, but they haven't been there. They haven't seen them, they don't know anything about it.

Mr. Smith has a strong belief that in order to build knowledge about a subject you must first have a firm grasp of background knowledge. In his eyes, the lack of prior knowledge is the biggest problem he faces with his general level students. Thus, Mr. Smith designs lessons that he believes will help students get a better grasp on the basics of Earth Science content. These lessons typically entail easy to follow directions and discrete packages of information relating to Earth Science curriculum. The following excerpt from a classroom observation demonstrates this idea:

> Okay, for question number two, um, there are 8 large plates here. I'm going to point to them real quickly. Eight large plates, here's one, here's one, here's another, here's one, there's one, there's one, there's one, and this one here is all one piece. In using those in number two, I want you to name the six plates that contain a continent. Name six plates of those eight which contain a continent. There are seven continents and six plates that contain those seven continents, name those six plates. (Long pause and walks over to researchers and whispers) A lot of them don't even know the seven continents. (Speaking to class) Okay, if you need more time on number two. We'll come back to it.

Mr. Smith points out all eight plates that are already clearly marked on the map. Mr. Smith goes on to give specific details to simplify the question as much as possible. The reason for this simplification becomes apparent when he demonstrates to the researchers his true beliefs about the majority of his students' prior knowledge base, when he whispers about their lack of knowledge about the continents. Those implicit beliefs greatly effect the discourse and expectations within his classroom.

Mr. Smith describes his students lack of prior knowledge, but what are his thoughts on his students are ability?

> Some of them know very little about anything academic. They can add and they can subtract, they can multiply if they have a calculator. They can't divide because they don't know which number to put in first. They have no concept of any higher-level math skills. So this is your basic add and subtract group. They have no geography knowledge.

Mr. Smith has a definite opinion about the ability of his students, based upon his long tenure of teaching in the lower-track setting. In particular, the last seven years he has worked directly with the general level (junior and senior) Earth Science students. Does his opinion of student ability affect the way he interacts with students during class? The following is an excerpt from a typical discussion of a worksheet type activity:

38	Mr. Smith:	It's two minutes and how many seconds? (3 second pause)
39	Damon:	25? (hesitation)
40	Mr. Smith:	5, 10, 20, 25, 30…two minutes and 45 seconds. Again, your calculator
41		won't do it. You can do it mathematically, but your calculator won't
42		do that.

These four lines of text are rich in meaning. Mr. Smith poses a question looking for a particular right answer (line 38). Damon takes a guess, and is wrong (line 39). Mr. Smith counted past Damon's answer using a clock face without offering an explanation.

This was followed by Mr. Smith reminding Damon that the problem can only be solved using mathematics techniques and not a calculator (lines 40-42). This style of triadic dialogue served to strengthen the teachers role as the knowledge authority in the classroom giving the teacher a distinct advantage in the power structure of the classroom (Lemke, 1990).

Once again, the lack of student skills forces Mr. Smith to alter the teaching of his classes. During a classroom observation, he quietly informs me about why he is having students cut out and paste the shapes of the continents together to make a world map.

> Some of them have no concept of the continent shapes and so this is still pretty much guesswork. Still there's a lot of challenge for these kids. The main problem is they don't recognize the shapes or how the map is split. This kind of lab they like, they like the puzzle and putting them together. I could give them this map already put together, but it wouldn't be as much fun to cut it out and put it all back together. Some of this I will just have to tell them, but some of it they can figure out using their textbook.

Mr. Smith uses his experience with these students to design an Earth Science course that he believes will be most beneficial and enduring to the lives of his students.

Let's look at Mr. Smith's beliefs concerning student effort that he sees displayed in his general level classroom. In many cases, Mr. Smith thinks that no matter what he does, it never seems to get through to his students in terms of effort or goals.

> Well, the kids tell you when they come in what their goals are. You know, ah, you put the work in front of them and they go at it, that's an honors class, but if you put the work in front of them and they don't do anything until you force the issue, than that's a general class. And of course, it tends to be that way all the time. I feel like my honors students, they're going to learn a lot almost regardless of what I do. And, um, sometimes on my worst days it seems like just the opposite with the general, it seems like they're not going to learn anything regardless of what I do.

Mr. Smith must also deal with unmotivated students who do not seem to want to put forth much effort, while attending his class. Therefore, Mr. Smith is presented with yet another problem that he must try to address in order to make his class more successful.

Lastly, Mr. Smith has definite beliefs concerning the home-life and value systems of his general level students. These ideas center on parental supervision, and the value of education:

> Among those that you have to spend so much time with, ah, are the single parent homes, or no parent – they are living with some relative, not being well controlled, parents are not seeing report cards, ah, parents have not succeeded in school. They have a poor concept of the value of education, you know it gets passes on to their kids. Um, these are homes with no magazines, no books, ah, TV is always on the wrong channel in terms of learning.

In the eyes of Mr. Smith, these students are uninformed and unprepared for school success. These factors will, apparently, negatively effect the performance of these students in the classroom.

Scene Two: The Other Side of the Desk (Student Beliefs)

The students also come to the classroom with their own belief systems constructed throughout their years of experience with schools. Scene One described the nature of Mr. Smith's belief system, and Scene Two will focus on the belief systems of the general level Earth Science students. Many of the students' concerns relate directly to the way Mr. Smith thinks about their abilities, future goals, home-life, effort, etc.

Let's first examine the idea of prior knowledge and ability. Mr. Smith believes that his students, "know very little about anything academic." Are the students aware of this belief? The following excerpt is taken from focus group number three:

Livan: He also thinks, like the whole class, is like ain't smart though.
Yerrick: He thinks the class isn't smart?
Livan: That's what I think, seriously.
Yerrick: How do you know that?
Livan: It's the way he acts towards us, you know its like, well He's got to explain everything elementary, you know. It's like...
Barb: That makes me mad. That's the reason why I don't do anything when he does that to me. I get mad at him.
Yerrick: Barb give me a time when he has treated you like he doesn't think you're very smart.
Barb: He does it to the whole class. He'll sit there and break it down, so easy that anybody, you know - He'll break it down like we was in kindergarten.
Livan: One time I asked him, like something about time, and he said we will done at this time and points to a place on the clock. I'm like you do not have to point to the clock to show me what time it is man.

This passage provides a poignant example of just how aware the students are of the beliefs that Mr. Smith holds for them. Beginning on line 48 Livan makes a broad statement that Mr. Smith thinks the class, "ain't smart." Both Livan and Barb give specific examples from classroom interactions and lessons to support their claim (lines 48-58). Interestingly, they also give insight to how Mr. Smith's beliefs can make them feel alienated and angry (Barb, lines 50-51; Livan, lines 57-58). The students seem to intuitively know and understand the implicit feelings that Mr. Smith holds for them as students, and people. This provides evidence of the power a teacher's belief system can superimpose on the mindset of the students in the classroom, causing a general undercurrent of anger and alienation toward the teacher and school.

So the students believe that Mr. Smith thinks they possess little academic ability, but are they aware of his beliefs concerning student effort and value systems? In focus group number four students give insight to how they feel Mr. Smith views them on effort, behavior, and value systems.

59 Barb: I believe he treats his Advanced Technology and Physics class different
60 than he treats us.
61 Damon: You see all the chemicals and equipment he has in there?
62 Barb: He probably feel the kids in Earth Science ain't up to potential so he really
63 don't have to communicate with us. I believe he feels that since we chose
64 to go that general way, that we're not worth his time because we just
65 chose the easy way out.
66 Amy: It's lack of respect for us, really.
67 Damon: I bet you, right today, if you go in there and ask him, how do you feel
68 about our class? I guarantee he say something smart. I betcha.
69 Andy: Like what do you think he would say?
70 TJ: Like we are bad, or that he's got bad students. You know.

In lines 59-65, Barb and Damon are discussing the fact that they think he treats his higher level classes differently because of the better equipment and materials he utilizes in those courses. In a sense the students are making reference to themselves not being worthy (in the eyes of Mr. Smith) of the better materials and equipment. Lines 62-66 are important in terms of student effort, the students perceive that Mr. Smith does not have time for or respect his lower-track students, "because we just chose the easy way out." It can also be interpreted that the students have a low self-esteem to refer to themselves as taking "the easy way out," which in itself could lead to lower student effort.

Damon and TJ (lines 67, 68, and 70) close out the passage giving insight to how Mr. Smith views them and their value systems. In Damon's opinion, Mr. Smith holds a disdainful view of the class as a whole. In line 70, TJ makes a point that Mr. Smith thinks his students are bad, or not good students. This demonstrates, that in the eyes of the

students, Mr. Smith does not fully understand his students nor the value systems they possess. To the contrary, most of the subjects within our study had definite future plans, many of which involved higher education (focus group one):

71 Yerrick: Tell me about after school, you talk about these other students as going
72 onto college. What are your all plans?
73 Damon: My plans. See I'm working right, so my plans, um, I'm about to get me a
74 vehicle. So that way, I'll still be working at McDonald's. That way when
75 I graduate, I go to work or whatever and then they will have me on
76 something steady. I'm going to Pitt (community college) for like two
77 years, then I'll transfer. That way, I'll still be making car payments and
78 that sort of stuff.
79 Barb: I'm going into the military. The Navy.
80 TJ: I'm going to Pitt for two years, my mom says there is this program to be
81 an occupational therapist assistant and I said to check it out for me and
82 I'm gonna go to school for that. Then I'm going to transfer to ECU.

Students value higher education and consequently plan to attend the local community college (lines 73-78; and 80-82). These students have definite plans that include higher education; however, they tend to differ from the widely accepted model of success in high school, followed by attendance to a four year university.

In an interview with Mr. Smith, he alluded that these students are from "homes with no magazines, no books, ah, TV is always on the wrong channel in terms of learning." This broad statement negatively labels the students in the general level Earth Science course. In fact TJ stated in an individual interview, "I love snakes and animals. I just really love underwater stuff. That's why I watch them shows on National Geographic and stuff like that." This misunderstanding of students' home lives and value systems can become a serious issue in the classroom. There may be some students that fulfill Mr. Smith's belief system, but this demonstrates not all his students fit this scenario. Students quickly perceive the notions their teachers hold for them and students,

in turn, become alienated toward the schooling process (Anyon, 1981; Steele, 1992, Willis, 1981). Thus, teachers must do their best to respect their students and make an effort to get to know their students so as to not make incorrect assumptions about a students' home-life, value system, ability, and any other aspect that can effect student/teacher relationships.

Act Three – The Labyrinth

Scene One: Science in the Lives of the Students

In Chapter two the ideal reform-based science classroom was discussed in detail. How does that description of science match the experiences and needs of these general level Earth Science students? In order to answer that question, this Scene will describe: 1) the typical science experience in Mr. Smith's class, 2) previous experiences students had in upper level science classes, 3) and how students think science should be taught.

Mr. Smith's Class.

The science in Mr. Smith's class generally mirrors his beliefs about his students' abilities. Accordingly, his class is dominated by following directions, map skills, computations, cutting, and pasting. The following classroom excerpts demonstrate some of these ideas. Let's look first at the idea of following directions and computations as science (this excerpt comes from a class activity that involved answering a series of questions pertaining to sea-floor spreading):

Mr. Smith: So then, number four, what are we going to be looking at is this. If you have the centimeters it would be in a hundred years, how many meters would that be? That is change the number of centimeters in number three into number of meters. Use your answer from number

three, the number of centimeters. In number four, tell me how many meters that would be, so your going to convert the number of centimeters to meters. Use pg. 788, on the left hand side. Remember, this stick is one meter (holds up a meter stick). Number four says change the number of centimeters to the number of meters, that should be a small number.

Mr. Smith used highly repetitive techniques to describe what the question is asking. In the preceding passage (lines 83-92), he rewords and repeats question number four in five different ways and ends the last repeat (of the question) with a hint (line 92). The reference to pg. 788 (line 89) of their textbook refers to a conversion chart that gives explicit directions on how to make the conversion from centimeters to meters. Then, Mr. Smith held up a meter stick, so that the students can visualize how long a meter truly is (line 90). This explicit repetition of directions serves three main purposes:

1) It makes the desired knowledge explicit to the class
2) It reminds the students of their role and who has the power in the classroom
3) This process continues the one-sided talk keeping the class from becoming uncertain, "monologue masquerading as dialogue" (Lemke, 1990).

Consequently, following directions can become a valuable tool in terms of control and power within the context of the classroom.

After question four is answered, the class moves on to question number five. Question number five asks if this rate of spreading continued for 100,000 years, how wide would the Atlantic be?

Mr. Smith: Okay, now, let's remember this ocean is not a hundred years old, it's a lot older than that. The Atlantic Ocean is much older than that. Shh just listen, I'll explain this for you. If you take the same rate, How many meters wide would the Atlantic be in a years? If you look at this number a 100 years and 100,000. This one is a times bigger isn't it? So get

98 an answer for number 4, and multiply by a thousand, that will be your
99 answer for number 5. So take your answers in meters from number 4 and
100 multiply by a thousand. That will be your answer for number five
101 which is how many meters?

In lines 93-95, Mr. Smith repeated that the Atlantic is old and that he will explain how to answer the question, "I'll explain this for you." Starting with line 96 and 97, Mr. Smith becomes extremely explicit in his explanation for achieving the correct answer. The directions evolve to, "So get an answer for number four, and multiply by a thousand," this is a explicit command, if students follow these directions properly they will have success in answering the question. Once again, Mr. Smith repeated the procedure in lines 99 and 100 so that all the students will understand the proper directions. It becomes apparent that following directions and simple computations are typical elements that take place in Mr. Smith's classroom.

The notion that science is following directions, simple computations, and directive orders is not consistent with the ideas of scientific inquiry. Mr. Smith employs methods that he believes will help his students succeed, but those methods do not include ideas pertaining to scientific inquiry. The evolution of simplifying directions into tiny, digestible steps will be discussed in a later scene dealing with negotiations taking place between teacher and students.

As a researcher, I wanted to investigate if these types of interactions were the same in other science classes that the students have taken. Most notably I wanted to discern if the students who had experience in Honors and College prep classes noticed a marked difference from the typical classroom operations of a general level classroom.

Students' Prior Experience.

Many of the general level Earth Science students have been in other science courses of another track level, advanced Biology, College Prep Chemistry, etc. The students' prior experiences in those classes tend to be very different from their current experiences in Earth Science. In general, students felt that their Earth Science class was less rigorous, did few experiments, and was not nearly as interesting as their former upper-level science classes.

The following excerpts come from individual student interviews where questioning centered around their previous experiences.

102 Yerrick: Tell me more about the Chemistry class. Compare the science you do in
103 here compared to that other class.
104 Amy: This is nothing. This is like being in a kindergarten class.
105 Yerrick: Be specific for me would you.
106 Amy: Okay, like it all puts you to sleep, its all boring. We don't do anything. In
107 Chemistry she would always liven things up with experiments and
108 projects and stuff that we had to do every week. It made you pay
109 attention and want to do stuff. In here you don't have anything to look
110 forward to, you don't have anything to help explain what he's talking
111 about. We don't have any hands-on experiences and when we do
112 its like coloring and stuff. You don't really get anything out of it.
113 Yerrick: In Chemistry were the projects like you pick something and you
114 investigate and present it to the class?
115 Amy: Yeah, that's how the projects were and then we had like experiments that
116 we did and we would do a lab every week. It helped you understand
117 what she'd been explaining all week. So you understood it better after
118 you did it. In here if you read and you don't get than you just don't get it

In lines 104-112, Amy is quite explicit about the differences between college prep Chemistry compared to Earth Science. She evens equates this class to kindergarten speaking to the lack of rigor in the instruction (line 104). She continues to describe that this class is boring and puts her to sleep, unlike her former Chemistry class, which was

kept interesting using a variety of activities (lines 106-108). In lines, 110-112 Amy paints a description of the science in Mr. Smith's classroom, few hands-on investigations or activities and when those occur they are typically cutting and pasting of some sort. In lines 115-118, Amy continues her discussion on the difference between these two courses in the context of level of understanding, providing a powerful student view on the fundamental differences that exist between the instruction in higher level classes compared to general level courses.

Livan also has experience in upper level classes and his much account of the difference that existes in instruction is quite similar to Amy's account.

119 Yerrick: Have you seen other kinds of science classes that are different?
120 Livan: Yeah, like last year when I took Advanced Biology, here at this school.
121 And when I went to GCA and took classes it was different. Advanced
122 Biology was harder, we never did anything like coloring or all the stuff we
123 do in this class. It's just like keep you occupied and you know, just hope
124 they don't do anything. I know it, but I'm not arguing cause it keeps my
125 grade up you know. So, I mean I can just sit there and play around all day
126 and still pass the class and Advanced Biology you had to be prepared and
127 you know, do everything, have your homework done and pay
128 attention in class to be able to pass the class. Here, you can go to sleep the
129 whole class and have a quiz the next day and still probably pass the quiz.
130 You know all we do in that class is busy work. Something like watch a
131 movie or cut paper, put it together, map stuff. I mean, I'm not arguing, I
132 like it. Other people in class are a little used to it I guess because they been
133 taking general for a while and I've been taking CP and Honors so its a little
134 different.

In lines 120-123, Livan explicitly stated that this class lacks rigor and that other science courses he has taken are harder and more rigorous. Livan also brought up the idea of behavior in the classroom, in lines 123-129. He describes busy work that just keeps the students occupied so that they don't do anything wild or out of control. What is interesting is that Livan states that the reason he can play around and sleep in that class,

because he can still pass no matter what he does (lines 125-128). Lines 130 and 131, he once again describes the typical activities of the class as busy work, videos, map stuff, cutting, and pasting. In lines 131-134, he makes an interesting comment about the other students who have been in the general track for a long time. Livan felt those students are used to this type of instruction and don't necessarily notice or understand the difference that exists between upper and lower level courses within the school.

Livan and Amy describe nearly identical experiences. They both recall that the upper level classes are more rigorous, more interesting, and more connected to the world around them. This affects the way these students interact within the Earth Science classroom, both make references to sleeping in class due to the fact you can sleep and still pass. According to students, the rigorousness of a class can effect the motivation and level of interest within a classroom. Thus, with very little rigor and no connectivity to students lives, the Earth Science students become highly unmotivated in the classroom.

How Students Think Science should be Taught.

It is often assumed that students have little interest in science. However, students never seemed to lack opinions about how to improve instruction in their Earth Science class. These suggestions revolved around creating more experiments and hands-on activities. This will serve to keep students more focused and motivated, as stated in an individual interview by Amy:

> We were talking about the sun one time, like you could take the class out and actually show them what you're talking about and actually show them what you're talking about in the sky. Instead of just telling them about it and drawing examples of it on the board. You

> could, just more hands-on stuff is basically what gets people's attention and keeps them focused.

These kinds of comments were not uncommon among the students many felt that the class could be vastly improved if instruction was made more pertinent to their experiences. Damon, in a focus group session, states many of the same concerns:

> He talks too much. We don't do no kinds of experiments, no chemicals or stuff like that. My other school that I came from we had chemicals, fire, and all that kind of stuff. We made colors with fire, we don't do that kind of stuff here. I would take a trip to the mountains somewhere and collect different kinds of rocks and just look at the rock and do experiments on them. And try to explain it to the kids, so they'll know.

These students tell us what they need and want from instruction; however, what they receive in the classroom is quite different.. Students find a discrepancy between what they want and need compared to what teachers are teaching them in their science classes.

The next question to ponder is do these students have any idea what real scientists do and is this class preparing them to do real science? In the following passage, students are discuss what they feel real scientists do.

135 Yerrick: I want you to think for a moment, if this class was to teach you how to
136 really be a geologist, what do think you'd be doing?
137 Livan: We'd be outside looking at rocks and stuff.
138 Yerrick: What else would you be doing?
139 Reggie: We'd be going on trips.
140 TJ: We would do stuff and not just keep it in the classroom and stick to the
141 worksheets.
142 Yerrick: What else do you think scientists do that you think you'd have to learn?
143 Livan: Use our minds more.
144 Jawon: Theories, hypotheses...
145 Livan: Let us understand exactly what's going on instead of just like the basic...
146 Jawon: Show us, details...
147 Damon: Get deep into it.
148 Livan: Break it down, but not elementary wise.

The students, in lines 137-141, the students basically voice their displeasure about being stuck in the classroom, having no real connection to the science that is happening outside the classroom. Lines 143-148 are a direct response to what science is in Mr. Smith's classroom. Characteristic interactions in the class are dominated by students following directions, performing computations, and map work. In this environment, students do not ask questions, rather they are expected to follow directions. These lines are characterized by students wanting to think more by investigating the details and not just regurgitating simple facts. Line 147, Damon specifically states that he wants to do more in-depth investigation of a problem, showing his dissatisfaction for the typical science experience in his Earth Science class. Livan, on line 148, asks that lessons not be made so elementary. He realizes that many ideas must be simplified, but not to the point that the lessons become an elementary exercise.

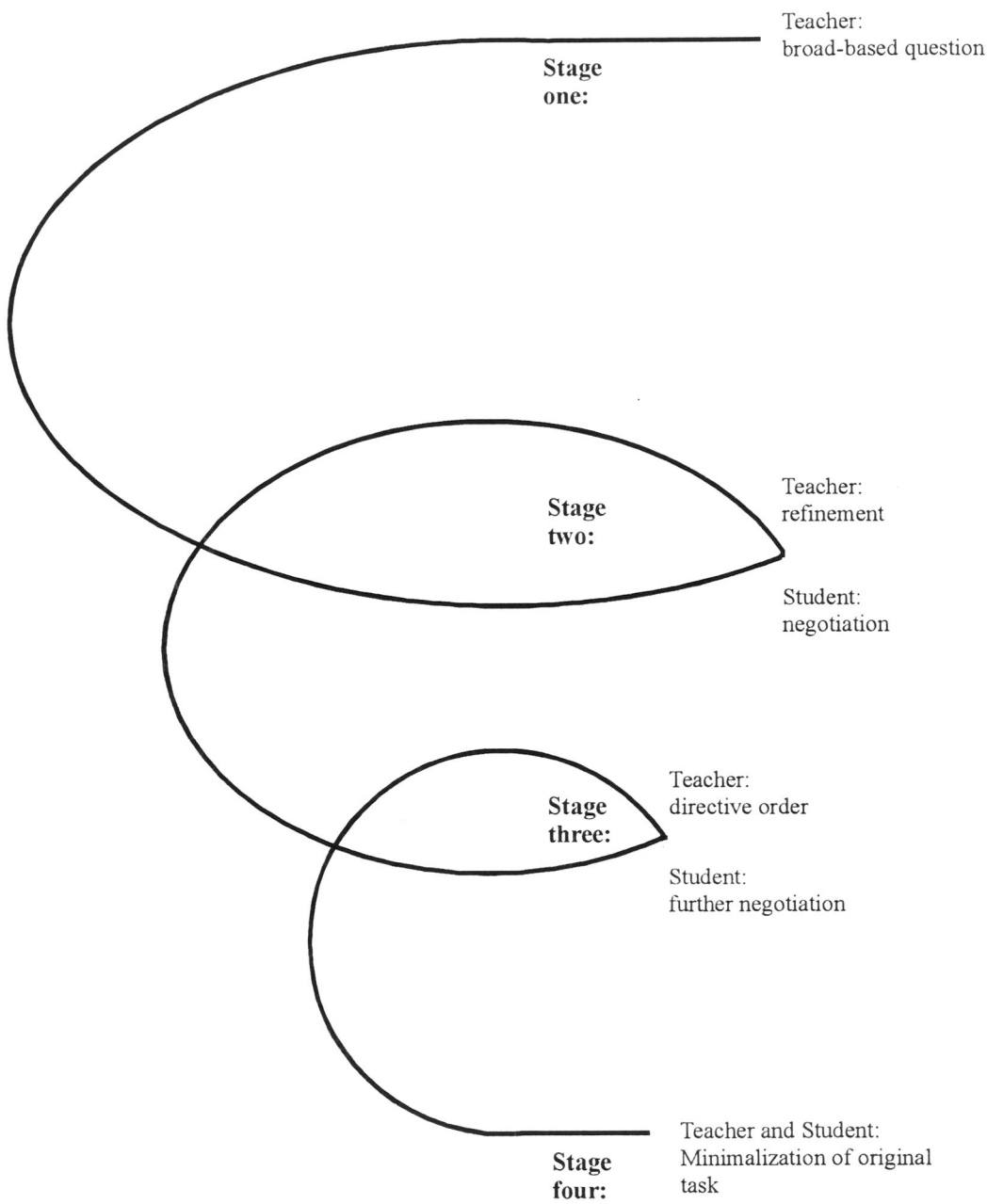
The preceding section has described: a typical lesson in Mr. Smith's lower-level Earth Science class, students' prior experiences in higher level science classrooms, and what students feel they need to learn from their science classes. It becomes apparent that students and teacher come into the class with different notions about what students need to learn. This discrepancy serves to alienate not only students, but also the teachers who struggling to do their best as well. What happens when both parties become alienated in the classroom? These different expectations and interpretations of experience in operation, one could expect all kinds of outcomes: student drop-out, violent outbreaks, high teacher turnover, student disinterest, etc. I next discuss the typical response of negotiating for minimal conflict in the classroom.

Scene Two: The Dance (The Art of Negotiation)

Experiences taking place within the classroom are not entirely at the discretion of the teacher, the students play a major role in determining the method and depth of instruction. Students and teachers work together to actively negotiate the minimum acceptable standard within the classroom. Students want to know what they need to do to pass, and teachers decide the level of achievement that is the passing standard. The typical pattern of negotiation process in Mr. Smith's class is characterized by a series of interactions that spiral down to a specific minimalized task (See Figure 3). Stage one begins with a broadly based teacher question. This is followed by stage two, where a student negotiates and the teacher refines the original question. Stage three continues this process until stage four is reached, at this point the teacher minimalizes the original question to the point of merely creating a directive order. This process is the typical pattern of negotiation during classroom discourse; however, students and teachers also have definite notions concerning negotiated behavioral standards. These ideas will be the focus of the following scene.

Let's first take a closer look at the negotiations that took place during classroom discourse interactions. The following excerpt demonstrates the negotiation process through all four stages.

149 Mr. Smith: Now, I'm going to ask you to use your work from yesterday to answer
150 some questions. Some of these will be easy and you may find some of
151 them to be hard, but do the questions based on your work from
152 yesterday. I want you to do your own thinking, don't ask your
153 neighbor.


Teacher:
broad-based question
Stage
one:
Teacher:
refinement
Stage
two:
Student:
negotiation
Teacher:
directive order
Stage
three:
Student:
further negotiation
Teacher and Student:
Minimalization of original
task
Stage
four:

154 Student: (speaking quietly) Yeah, right.
155 Mr. Smith: So just start. We are going to put the answers on the back of that paper.
156 The same paper, put it on the back. Just turn that paper over and put it
157 on the back. So for the first question...
158 Student: You want us to write it down?
159 Mr. Smith: Just put the answer down. The first question, where will the newest sea
160 floor or ocean floor be, in the middle of the ocean or near the edge of the
161 continent? We just talked about this so this should be simple. Where
162 would the newest ocean floor be in the middle of the ocean or near the
163 continent. By newest we would mean the youngest.
164 Student: Do we write out the whole question?
165 Mr. Smith: Whatever you think the answer is, you put it on your paper don't talk
166 to me about the questions.
167 Student: So just the answer.
168 Mr. Smith: You don't have to write it in complete sentences, just say middle or the
169 edge.

In lines 149-157, Mr. Smith attempts to set up the ground rules for the lesson and gives a broadly based set of criteria, "your own thinking," and "put the answers on back." This serves as stage one of the negotiation process. Line 154 gives a measure of foreshadowing about the process of negotiation that is about to take place. The students know that if they persist in negotiation they will not have to do their own thinking and take the easy way out. Stage two of the process begins, during line 158, when a student asks, "You want us to write it down?" This followed by the teacher (on line 159) rephrasing the original statement to, "Just put the answer down." In lines 158-163, the teacher continues with the line of questioning until stage three begins (on line 164) with a student asking, "Do we write the whole question?" Lines 165 and 166 show the frustration of the teacher who wants them to think about the question, while students are continually hammering him with questions concerning the logistics of the answer. The students continue with the negotiations until stage four begins on line 167, "So just the

answer?" The teacher answers this last question with a simple directive order on line 168 & 169, "just say middle or the edge."

This example demonstrates how students negotiate the minimum acceptable standard of the teacher. They understand the type of talk required to undermine the teacher's initial intent of having students think about these questions on their own and have him settle for their answering "middle or the edge." The students are acutely aware of the ways to lessen the teacher's demands upon them as they deftly maneuver through the negotiation process.

The negotiations go beyond the typical classroom discourse interactions between teacher and students. Negotiation plays a huge role in the ground rules for what is considered to be acceptable behavior within the classroom (Eckert, 1989; Page, 1991). These ideas of negotiated acceptable behavior can be seen in the beliefs both students and teachers hold about the classroom. Mr. Smith considers certain actions acceptable if the student is not disrupting the other students in class. The following example is an excerpt from an individual interview where Mr. Smith was asked about a student who slept for 45 minutes during class.

> He's seen the grade for the six weeks and he knows it's pretty much done. So, he's not going to be a trouble maker, but he's going to come in here and go to sleep. Now there are others that are just pretty much hyper, that are in the same situation and their going to be loose cannons. They're going to make it difficult all the time because they are not going to be cooperative."

Mr. Smith arrives at the notion that a sleeping student is acceptable has been negotiated through the idea that it is better to have a student sleep through class rather than disrupt the entire class. This passage reveals the implicit beliefs and expectations he holds for

his lower-track classroom students. The students offer few options other than lowering his behavioral standards. Consequently, the teacher and student actively negotiate an acceptable middle ground dealing with behavioral standards.

The students support this idea from passages taken from individual interviews and focus-group sessions. Livan offers keen insight to the fact that the students do not give Mr. Smith much choice in the behavioral expectations for his class.

> Well, pretty much with Mr. Smith if he doesn't do it that way then he's going to have the whole class nail him, pretty much, and he knows that. That's going to look bad for him, I think. So he's got to do it that way, pretty much.

What does a teacher do when the class will "nail him" if he does not accept certain behavioral standards? We begin to see that Mr. Smith does not single handedly call all the shots when it comes to setting the standards within his classroom. Damon describes during a focus group session how Mr. Smith handles discipline problems within his own classroom.

> See I say, Mr. Smith, he gets strict sometimes but compared to other teachers - he can be cool. Other teachers will write you up automatic, but Mr. Smith he don't even write you he just like step outside the class.

Damon is voicing his approval for the method in which Mr. Smith disciplines his class. It is most likely acceptable method of discipline because it is a negotiated middle ground between teacher and students. The students will accept being placed in the hallway as long as Mr. Smith does not write them up. Damon even feels that this is Mr. Smith being cool, when compared to other teachers.

It becomes apparent that Mr. Smith must continually negotiate standards both academically and behaviorally. This negotiation serves as a metaphorical dance that the

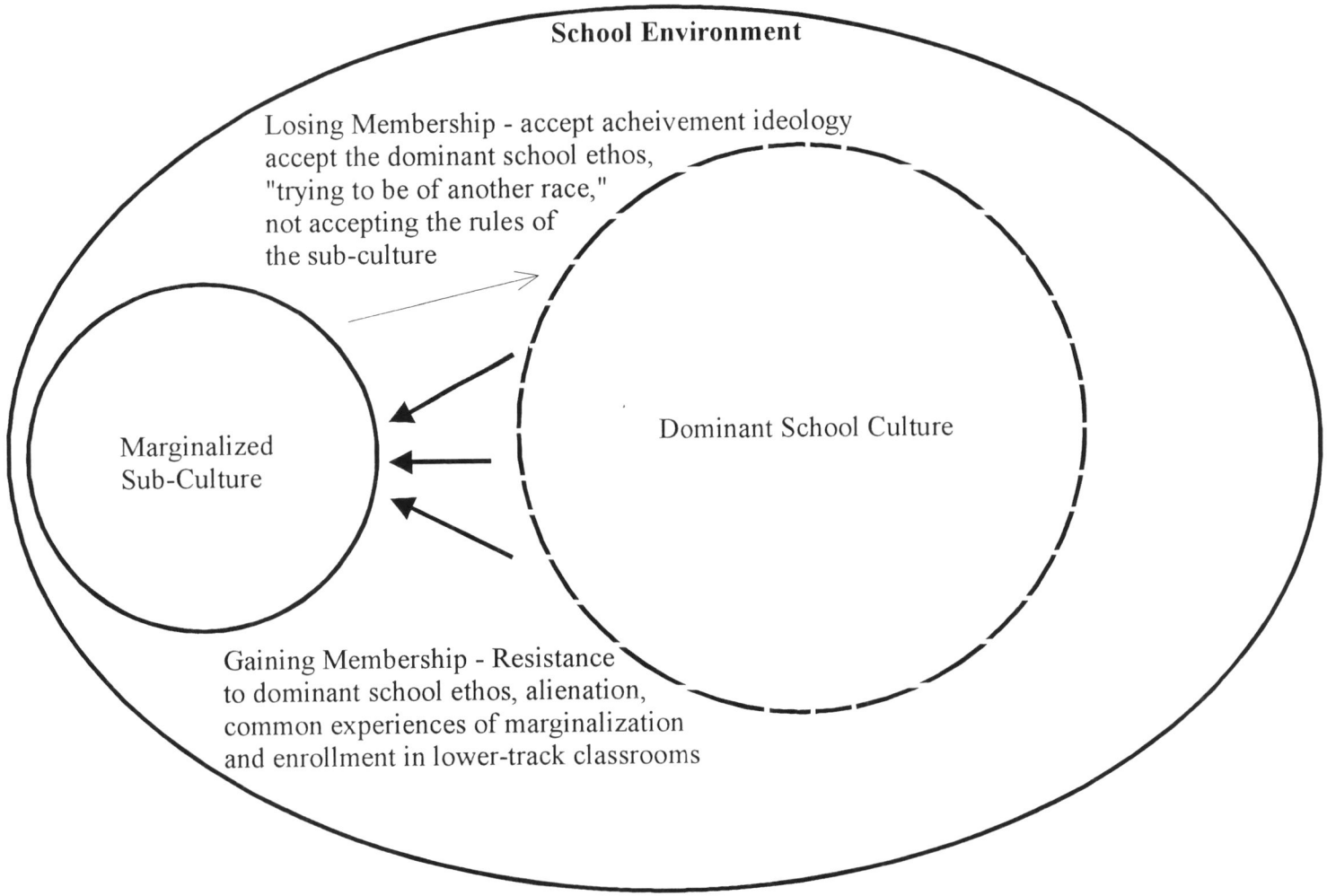
teacher and students constantly engage in to keep classroom standards acceptable to both parties. We begin to realize that the systems and standards that exist within the classroom are not solely the responsibility of the teacher, the students play a powerful role in developing the classroom standards for academics and behavior. In addition, the idea of scientific inquiry is lost because of the lower standards accepted by both student and teacher.

Scene Three: Social Membership in Lower-Track Classrooms

The students of this lower-track classroom subscribe to a tightly knit circle of social membership recognized by students, teachers, and the administration of the school. This social membership includes friendships, behavior, lack of achievement, and sometimes race. Students are able to enter and exit this membership according to their attitudes concerning the preceding aspects that social membership entails (See Figure 4). This social membership can have profound effects on the ways students view school and school success. This scene describes the ways: 1) students recognize membership, 2) students lose right to membership, and 3) counselors and administrators become the gatekeepers for which students enter and exit lower-track classrooms associated with membership.

How Students Recognize Membership.

Students have strong views concerning which students belong within the group and other students who do not qualify for membership. The methods by which students



* note - arrows represent the frequency in which students gain or lose membership within the sub-culture. It is much easier for students to enter the sub-culture than to leave.

gain social membership in a this general level peer group include, but are not limited to, having common experiences (such as dealing with prejudice), lack of achievement, enrollment in general classes, and systemic socialization. The following excerpt, taken from a focus group discussion, highlights the idea of "sticking together" in the general classes.

170 Barb: Most blacks like me, see I could of taken advanced biology, but I chose to
171 take earth science because it's easy. A lot of blacks do that I don't know
172 why, they just do.
173 Amy: You shouldn't say it like that. A lot of people in general chose to travel
174 down that road, the easy road.
175 Jawon: The reason you see mostly whites in those higher classes is cause like the
176 blacks want to stick together, with their friends and stuff.
177 Damon: They probably already got their plans made. What they need to take in
178 order to go such and such.
179 Jawon: Some of my friends like building toward their future cut out all the hanging
180 out. Their serious about their school work and they kind of stay apart and
181 I understand they want to get a good future and all, but you don't have to
182 do it that way.

This passage provides strong support for the notion that students want to stay members of the social grouping evidenced. In lines 170-172, Barb discusses her reasoning for not taking Advanced Biology and explains why she and other black students take Earth Science - because it is easy. In this way, Barb describes herself as a member by choice and that she would rather take an easy class to remain a member of the social group. However, Amy retorts (line 173-174) that many people chose that route because it is easy, not just black students. Jawon and Damon touch upon important keys pertaining to social identity in lines 175-182, which include differences in race, sticking with friends, and hanging out. Jawon makes a clear distinction between black and white and the classrooms they select stating, "The reason you see mostly whites in those higher classes

is cause like the blacks want to stick together, with their friends and stuff" (lines 175-176). Damon strengthens this statement by adding in lines 177-178, "They probably already got their plans made. What they need to take in order to go such and such." Here both Jawon and Damon are creating the idea that students in the lower tracks do not have definitive plans and the vital importance put upon staying within the boundaries of the social membership. Jawon ends the passage (lines 179-182) by discussing certain students who have left the boundaries of the social membership in order to pursue goals that relate to education and their future. He mentions they cut out all the hanging out and stay apart from the group, basically these students cut their ties with the social membership and are pursuing a different peer group. Jawon expresses that it doesn't have to be that way.

Social membership within a general level peer group can be an extremely powerful force in the minds of the students (Ogbu, 1978; Solomon, 1992; Willis, 1981). Students from inside the circle of membership know where the lines are and few traverse them. Alienated youth do not acquire this membership overnight nor do they necessarily accept it as their first choice. Students have been socialized for their entire school careers in a system where students were implicitly informed that they belong in these low-achieving peer groups (Eckert, 1989; Hopkins, 1997; Kunjufu, 1985). Students are not compelled to leave the circle of social membership because they understand through extensive socialization that they belong within the boundaries of the low achieving peer group.

How Students Lose Rights of Membership.

Amy and Barb provide compelling reasons why they truly believe they belong in the lower-track classroom. This excerpt demonstrates how years of socialization can formulate strong student opinions about where they belong within the school hierarchy.

183 Amy: You know how Corporal Houston acts. You have a lot of black students
184 that act that way, that act all high and mighty like they're trying to be of
185 another race and what not. That's why when you go into those AP classes,
186 that's why you see them in there. They're trying to be something, I mean I
187 understand people trying to get a higher education and what not there's
188 nothing wrong with that, but if your trying to be something you're not then
189 that's a different story.
190 Barb: The people you're trying to be like, they laugh at you.
191 Amy: All the black females that came from Bayside with us, may be like us on
192 the outside but I don't know what they're thinking of here.

In lines 183-186, Amy makes a distinction between black students who know their place within the school and black students who are enrolled in AP classes. She describes those black students in AP classes are, "trying to be of another race." Basically, if students step out of the general level peer group and into an AP class they lose their membership from the group. This demonstrates just how powerful peer groups can be when dealing with these students. If a student wants to break out of the socialization loop, they will lose membership from their peers and be shunned as someone, "trying to be someone they're not." In lines 186-189, Amy softens a bit that she understands people trying to get a higher education, but she doesn't offer any explanation how a student can enter an AP class and not step outside of the social membership. Barb supports Amy's statement that the other AP students laugh at you because you are trying to become one of them. This serves to build solidarity among the members of the low achieving peer group, where they are strengthened by rejecting the formal process of schooling and those who are

successful in that schooling process (Anyon, 1981; Steele, 1992). Amy ends this passage with a powerful statement concerning all the black females that went to her elementary school have changed. She states (in line 191-192), "All the black females that came from Bayside with us, they may be like us on the outside but I don't know what they're thinking of here." This demonstrates how these girls have left the confines of social membership within the context of the general track peer group, and are now foreign to the members within that peer group. In terms of Cross' (1971) four stages for the formation of cultural identity, Amy went through the pre-encounter and encounter stages while attending elementary school. She is now firmly entrenched in the immersion/emersion stage, where she has evolved from her old frame of reference to her new vision of black identity. She has withdrawn from the dominant school culture and aligned herself with what she believes are elements of black culture.

How Students Gain Membership.

Students described how previous members have been shunned from the group for stepping outside of the accepted sub-culture. The following section documents the case of Livan and TJ who both earned their right to enter into this tightly knit social grouping and are now full-fledged members.

Livan was born in Cuba, moved to Venezuela, then to Miami, next stop New York, and finally ended up here in Eastern North Carolina. He spent two years attending the local private Christian Academy, before entering Ridgemont High School. The following

account discusses Livan's arrival at the high school and his subsequent initiation into the low achieving peer group.

193 Livan: What they were talking about before, I see it like this. I'm Hispanic, my
194 Mom is Venezuelan and my Dad's Cuban. And I had a hard time fitting in
195 with black people, coming from Miami to New York...
196 Amy: We could tell. He got out here and acted like he was better than all of us.
197 Livan: Well, (laughter) it was like, I hung around mainly Puerto Ricans, Cubans...
198 Yerrick: How many are there around here?
199 All in unison: None.
200 Livan: But then I was like, I had to get used to hanging around all black people.
201 What's wrong with him, How come he ain't doing things this way. And it
202 was like How come they couldn't do this the Hispanic way? Then you get
203 used to everything being Hispanic to...It was like culture shock.

In lines 193-195, Livan begins to explain his perspective from outside the circle of social membership. He felt that he did not fit in and that he was different from his peers at Ridgemont. This outsider perspective is supported when Amy (line 196) verifies that Livan was indeed different from the rest of the membership stating, "He got here and acted like he was better than all of us." Lines 197-199, gives further evidence for the distance that Livan remains from this group of peers due to the fact that are no Hispanics within the high school. Lines 200-203, Livan begins to explain how he had to adapt his thinking and adjust the culture shock of being on the outside looking in.

What does Livan do about this situation? How does he begin to gain favor to fit into this social membership? Later in the same focus group, Livan discusses the ways in which he became a member of the general track peer group. Livan recounts his troubles with the administration and how he began failing classes, which opened up the doors for membership among the general track peer group.

> I know what he's saying cause I did it my freshman year. I acted up so bad. I was like, I changed up my sophomore year. My freshman year, I

> got like four cards in the office with this stuff up there. I like had like, I was the second worst freshman at school. I've been up to office a couple of times, for silly stuff, but nothin ever since. I mean, but I failed my freshman year.

Livan's freshman year becomes a proving ground to the members of the peer group that he does not buy into the official schooling process. Livan consistently spent time in the office, compiling a vast list of behavioral offenses along the way. This was coupled with the fact that he was failing his classes, proving his reluctance to buy into the official schooling process. These activities earned Livan his membership within the general track peer group. Now that he is within the circle, he can maintain his status through occasional office visits and just getting by academically in the general level classes.

TJ was the only "white" student within our group of subjects, yet we soon realized that he not necessarily considered "white" by the other students, as well as the administration. I first thought that TJ's inclusion in the general track peer group gave evidence that race did not play a large role in the general track social membership structure. However, as my efforts in research of social identities and race increased, I came to the realization that TJ was white only by skin color. The students were also quite forthright in their opinions about TJ being a member of their social grouping. The following excerpts give insight as to how TJ retains his membership among the group.

204 Yerrick: So you all have experienced prejudice, but you're the only white student
205 in this group...you've seen it?
206 TJ: I feel, You know what I'm saying.
207 Damon: You know he hang around us, so since he hang around us, they are
208 probably trying to get to him to.
209 Amy: Like okay, prejudice white people, they shun him, because he's always
210 with a group of us. You know what I'm saying?

TJ only answers with a few short words about racism (line 207). Then immediately following his response, lines 208-211, both Damon and Amy describe how TJ is perceived by others within the school. They basically state because TJ always hangs out with them and is friends with them, he is considered black by the prejudice white students, "they shun him." This leads directly to question whether the school administration perceives him differently, as well. The following excerpt describes how TJ is perceived and many times discriminated on by the faculty, because of his association and adoption of the minority peer group.

212 Amy: Like when He (the principal) sees TJ he sees him different than other
213 white people.
214 Yerrick: Cause you're hanging out with them?
215 TJ: One time I was walking down the hall and I had my arm my girl and she is
216 black. Then he told me to take my arm off her, but then he saw this white
217 couple and he didn't say nothin to them and he just walked on past.

The students carry strong feelings concerning the ways in which TJ is treated. In lines 212-213, Amy makes no pretense about the way in which TJ is treated by the principal. TJ himself has learned first hand the discrimination that members of the general track peer group must deal with. This first hand experience (lines 215-217) strengthens his bond in the group, while simultaneously garnering respect from the peer group members.

TJ's story is more complicated than Livan's due to his adoption of a culture that differs from his skin color. Earlier in chapter two this report built a case for an alternate definition of race. Race in terms of a governmental definition is a cut and dry issue, you are one or the other; however, the social constructions that play out in the lives of people are far more complicated (Giroux, 1988). For the story of TJ, we need to conceptualize a view of race as a culturally assumed identity, or ethnicity. Gibbs and Huang (1989)

describe ethnicity as a, "cultural identity and a set of prescribed values, norms, and social behaviors." This is formed to help the student construct an identity of, "self, the world, and future opportunities." TJ has prescribed to these views and behaviors and consequently has become a member of this minority group despite his being "white." In addition, iit is important to note that TJ self identifies his racial identity. In terms of Cross (1971), TJ is at the internalization stage (stage 4), where he has achieved security and confidence in his own identity.

The Gatekeepers.

The administration helped define the dynamics surrounding this social membership within the general level peer group, in fact they are the gatekeepers for which students enter and exit the general level classes. A few of our subjects had similar stories for the reasons they are in Mr. Smith's class, as well as the reasons they can not exit the general track level. These students are quite aware of the fact that they are stuck in the class despite their best efforts to get out. This section will give accounts of students who are struggling to get out of this class, but realize they have been stripped of their choice and are stuck.

One particular situation centers around Amy's dealing with some very tough times during her junior year: unplanned pregnancy, recurring kidney infections, and a serious personal injury. These events led to her struggling to the point she felt it best to drop out of school in the second semester of that year, at which time she was enrolled in college prep Chemistry. Upon returning to school

the following year, her counselor suggested that she take the general level Earth Science course instead of the Chemistry course she had previously taken. After a few weeks in Mr. Smith's class she realized that she wanted to move back into Chemistry. The following passages recount the troubles Amy met when she went to the administration to change her class.

> I went and saw my counselor and he was like there isn't much we can do. So I went to another counselor and she told me there wasn't much she could do, so I went and talked to Dr. Merlen and he told me, get your Mom to fill out a withdraw sheet.

At this point, Amy has contacted three separate administrators trying to get someone to help her get back into the Chemistry class she was enrolled in one year before. The third person was the first one to offer her even the slightest bit of hope.

> If she decides and by then they decided there was no place else to put me, it was taken. I talked to Mr. Franco and I told him that all the problems and stuff I'm having in this class. I've been suspended because Mr. Smith and I had words and what not. I was like I could do without this and I'm sure he could. So Mr. Franco was looking to get me out of class but nothing much really came of that either. The best advice I got was to stay in here, mind your business, and keep your mouth shut.

Her hope was soon dashed when she was told there is no other place for her. There was apparently no move the administration could make to put her back into the Chemistry class where she was previously enrolled before her string of bad luck. Amy describes to Mr. Franco that she is having all sorts of problems in this course, but nothing really materializes. The last line of the passage is undoubtedly the most powerful, "The best advice I got was to stay in here, mind

your business, and keep your mouth shut." This suggests that these students are socialized to believe that the path to school success involves being passive followers of directions.

Damon has a slightly different story but he was also unable to get out of Mr. Smith's class. Damon failed Mr. Smith's class during his junior year and was re-enrolled in Mr. Smith's class again for his senior year, despite the fact there are two other teachers who teach Earth Science. There is a general school policy of not putting students back with teachers who they have failed before, but in this case there is no solution offered to Damon.

> I went to Mr. Kennedy because you know if you fail a teacher one year, you ain't supposed to have them the next year. I told him that and he said he couldn't take me out of that class and I asked him why and he couldn't really give me no reason. So I just said alright and I went back in there. I didn't have no choice but to try and behave.

This account is frighteningly similar to the response given to Amy. The counselors tell the students the situation is out of their control and do not really offer any truly viable solutions. This leaves the students no choice and once again the socialization comes out in the students thinking. "I didn't have no choice but to try and behave." Once again students break down the essence of the classroom as a place to behave, to follow directions, and to keep your mouth shut. This socialization is ingrained in the students for years and this is just another aspect that they are reminded of their position within the school hierarchy.

Livan's story is quite different and provides some clues for why counselors may be so reluctant to move kids out of Mr. Smith's class. Livan gave

a vastly different account for the reason he landed in Mr. Smith's class and he had no intentions of wanting to leave that situation. His placement into this course was a conscious effort by his counselor to put Livan into a course that he could be successful in without too much effort.

> My counselor was like, she said, she knew last year I acted all right, but I didn't feel like doing work. This year she said was going to put me in a whole lot of easy classes where the teachers are easier. So like I would have no excuse, so that's what they did and my grades ended up being better.

Livan's counselor made clear-cut efforts to put Livan in, "easy classes where the teachers are easier." This would help Livan improve his grades and take away any excuse that he had for not getting passing grades. This would pave the way for Livan to graduate with little or no difficulty.

> You know, I was in classes where I could work, but still you know sort of lay back. I like that, but that's why I'm in Mr. Smith's class this year. Otherwise I was selected for Ms. West's class. I was in that class the first day of the year.

Livan explained that he could get by with little effort, which is the sole reason that he is in Mr. Smith's class. He continues to tell us that he was taken out of another section of Earth Science so that he could join the ranks of the other students who belong in this, easy class with an easy teacher.

This gives light to possible reasons that make counselors incredibly reluctant to move students from Mr. Smith's class into other sections of Earth Science or other science courses. Counselors may harbor notions about which classes students will have the most success. If they believe that Damon and Amy's best chance to make graduation

is to sit in Mr. Smith's class and keep their mouths shut, then they will not give those students any other options. Counselors use their opinions, concerning which teachers and classes are easiest to make decisions that stratify students into particular classes or track levels.

It becomes apparent that students and administrators are both aware of the circle of social membership and once you have entered that realm, it is extremely difficult to break out of it. Counselors hold the key to students' entering into lower track levels as well as those who are allowed to leave that track level. We have seen in a few poignant cases where students are prohibited from leaving their current class placement no matter how hard they try. Conversely, there are students who are put into this track by choice so that they can make it to graduation with minimal ease. This gives us evidence that both students and administrators are aware of the existence of a low achieving peer group and each play a part sustaining the boundaries and member status of that peer group.

Act Four – Hopes and Opportunities

Students revealed interesting insights concerning motivation and the characteristics of their ideal teacher. These ideas came to light when students were asked about the ideal characteristics a teacher must have in order to deliver effective instruction. This serves to inform teachers concerning ways that they can try to make connections with these students. The following passage demonstrates the impact a caring teacher can make upon a students' achievement, as well as their motivation.

218 Amy: Okay, I was saying like its easier to be more motivated in a classroom of a
219 teacher that is pushing you to be a better person or do this and do that

other instead of letting you do whatever. You know, if a person cares you tend to think, well you know maybe I should. They know that I can do it and maybe I should. It motivates to do stuff that you wouldn't do any other time probably.

Andy: Does anybody agree with that or want to add to it?

Reggie: I agree.

Livan: I agree, too.

In lines 218-221, Amy describes that teachers who care push students to be better people, giving those students a reason to achieve. These teachers are not the ones who just let students, "do whatever," rather they are challenging their students. She continues to describe (lines 221-223) how teacher attitudes about their students can motivate students to achieve to heights they would not typically reach, "it motivates you to do stuff that you wouldn't do any other time probably." The other students of the focus group also agreed with Amy's point of view in lines 225 and 226.

Andy: Be specific, what are some things that a teacher may have done that lets you know they care about you?

Damon: One teacher will be like you did such and such and you're dropping or something like that. You know, they give you hints. Mr. Smith see he don't do that he just start cutting on you. He'll still give you a hint but he makes you mad we be ready to punch him in the face.

Damon contrasts how certain teachers show they care and the fundamental difference that occurs in the general level Earth Science course, taught by Mr. Smith. In lines 229-230, he discusses that teachers who care will give you hints about how you are doing in the class and let you know when you need to work harder. He continues to describe Mr. Smith's class, in lines 231-232, "he just start cutting on you." Then he restates that Mr. Smith will give you hints; however, in doing so he will insult and anger students adding to their alienation evidenced by the statement, "he makes you mad, we be ready to punch

him in the face." We see that these students have a high level of alienation and feel that Mr. Smith does not care for them or respect them.

233 Livan: Mr. Smith, I believe right after school's over, he don't care nothin about our
234 class.
235 Amy: He don't care about the class while were there. Why should he...?
236 Livan: Yeah, while we're there he don't care so we know he don't care when we're
237 gone. He probably chillin at home watching Frazier, or something.

Lines 233-237 show the depth and intensity of beliefs that students harbor concerning their teachers lack of caring during class and after school. This leads to student apathy and alienation in the classroom, many students question why they should care if the teacher does not. The lower track classroom then becomes a battle of wills, where teachers and students are equally alienated and both quit caring for one another leading to feelings of animosity. This leads to a highly negative environment that does create the necessary environment needed for effective instruction.

The number one aspect of an effective teacher in the eyes of the students is a teacher who cares about students as people first and students second. This idea is closely tied to respect, if students feel respected it can also effect their thoughts on the classroom and the teacher. Students cite teachers can show respect for them by holding conversations with them, and doing their best to relate to them.

> Certain teachers if you speak to them they'll try and hold a conversation with you, you know, laugh with you. Some teachers won't they just go on about their business when you see them in the hallway, or whatever, other than the classroom.

This quote from Damon proves that many students feel distanced from their teachers, that teachers outside of the classroom do not want to make any connections with their students. Conversely, many teachers also feel distanced from these students evidenced

by the belief systems that Mr. Smith carries into his class, as discussed in Act Two-Scene One. Students and teachers both harbor strong feelings toward one another and it plays out in an extremely antagonistic atmosphere in the classroom. This situation creates a counter- productive environment for instruction, where all parties involved do not trust, respect, or care for one another, making meaningful learning a nearly impossible goal.

CHAPTER FIVE - IMPLICATIONS

Overview

The goal of this study was to give both educators and people from outside the realm of education, a sense of what is happening in lower-track classrooms from the perspective of students and teachers who daily live out the story you read on the previous pages. Throughout the course of this study, the depth and complexity of the problems associated with tracking became more apparent. It is not simply schools label students and the students carry out a self-fulfilling prophecy, rather the problems associated with tracking come from the culmination of many varied factors. These factors include low expectations, teacher beliefs, social membership (sub-culture identity), lack of parental involvement, student decisions, counselor decisions/beliefs, etc. This study gives insight to the importance of these factors and how powerful their impact can be on the educational life of students. The last chapter explores the question, where do we go from here? This study will hopefully provide a guide for future research, an understanding for the complexity of problems that exist when tracking systems create stratification within school communities, and possible solutions to counteract the negative effects associated with tracking.

Limitations of the Study

It is important to note that are limitations to the ideas and findings that this study has determined. Primarily, this study considered the "researcher as the instrument," meaning that the constructions and interpretations of the researcher are a reflection of the

researchers own world-view and experiences. Hence, my interpretations may not be the same interpretations that another researcher may make in the same situation with the same subjects. This gives the study no generalizability when trying to compare it to other situations and other groups of subjects. The regional (local) rural discourse also plays a key role in the lack of generalizability, these students come to school with home-based discourses that are specific to the this region.

Another major limitation is that researcher was not privileged to the life histories of the subjects involved, other than what came out as a result of discussion and interview sessions. This did not give the researcher a complete view of the lives of subjects, which would have given a deeper understanding for the subjects reaction to certain situations associated with lower-track instruction.

The assumptions of the researcher also play a key role in the limitations of the study. There were two major assumptions carried by the researcher, when this study began: 1) that the quality of instruction in lower-track classrooms is not equal to the quality of instruction in the upper-tracks, 2) and that the reform standards of the NSES is desirable, needed, and possible. These assumptions fueled the researchers desire to work on this project and could possibly effect the interpretations and findings throughout the study.

The study did not make an attempt to explain how student/teacher views concerning tracking evolved, rather the study was concerned with documenting what took place within the classroom and school environment. There is no perspective on change or how the students/teachers developed these ideas over time, or where those ideas are

headed in the future. The study serves as a snapshot of understanding into the lives of students and teacher during a specific point within their educational careers.

Implications for Research

As a researcher, I felt confident that I understood most of the dynamics that exist within lower-track classrooms, due to own teaching experience and the amount of research done before entering the classroom. However, I quickly began to realize that the problems were deeper and more complex than I first thought. Most of my research centered on teacher/student expectations, belief systems, and aspects of social reproduction. I soon realized that aspects of social identity and membership played huge roles in what was taking place in the classroom, prompting me to recruit a social worker to participate on my thesis committee.

This suggests that researchers need to focus their efforts on how aspects of cultural identity affect students in lower-track classrooms, especially lower-track science classrooms. This is due to the authoritative stance of science and the manner in which science privileges certain styles of discourse. These students have been taught that science is authoritative and that it is knowledge accessible only to an elite few who hand down "scientific truths" to memorize. Researchers need to understand the ways in which science instruction privileges certain voices and marginalize certain voices, leading to student alienation from the official school ethos.

This requires the researcher to develop methods to determine what scientific literacy truly entails. Educators need to depict science as something other than a list of

topics to be memorized, and regurgitated. Reforms are currently asking for science to be more of a pursuit of the acquisition of knowledge by engaging in ways of thinking, acting, and speaking like professional scientists. However, reformers must carefully define what scientific literacy truly means and create methods to make this type of knowledge accessible to all students. If we instantly label students, early in their educational careers, and earmark them for instruction that does not give them the tools of scientific literacy we will never realize the goal of "scientific literacy for all students."

Implications for Practice

A large gap exists between what students feel they need from an Earth Science course and the notions that teachers hold for those students. The teacher in this case designed class around mapping skills, worksheets, and bookwork, which was done because he believed students "enjoyed" these types of activities. However, students continually made reference to the fact that they will never use any of this information later in life. They believed that Earth Science should be more connected to their lives by incorporating studies of the region around them, rather than simple lessons that are distant from their experience.

Mr. Smith developed his own belief system, which demonstrates his bias towards the general level Earth Science student. This profile represents a student who possesses little prior knowledge, has low ability, lacks effort towards school, does not value education, and comes from homes with very little parental support. This view is in line with research done on beliefs systems of other lower-track teachers. Conversely, it was

frightening to realize just how aware the students were of the beliefs Mr. Smith held for them. This student awareness creates feelings of alienation, frustration and animosity within students from the general track Earth Science class. These beliefs all culminate to create an antagonistic atmosphere creating an unproductive learning environment.

"Hope-givers"

If teachers are to have any measure of success in their endeavors to bring the ideas of the NSES into lower track science classrooms, they must make a concerted effort to become "hope-givers." Alienated and marginalized students understand they have been cast aside by many teachers and administrators. This only adds to their disillusionment with school. The first stage to draw those students back into caring about education is for schools to that disillusionment. This can be achieved through caring and conscientious teachers and administrators who push students while also caring for them. Give these students hope by letting them understand that they can achieve and that they can succeed. Schools need to design ways that students can leave lower-track classrooms when they desire it, rather than continually rerouting them back into dead-end opportunities. Don't all students deserve a chance?

It is important to note that when we strip opportunity from students, we are stealing their ability to empower themselves. Thus, students form strong identities within their sub-culture group, which serves as the students only power within the school.

Social Issues

I began the study with a framework that was too narrow to incorporate the tremendously important aspects of sub-culture identity and social membership. This required me to expand my original framework to incorporate these aspects which I was unaware of before the study. My lack of understanding could be a sign of the lack of teacher knowledge concerning the issues that effect lower-track students, considering my three years of experience in lower-track instruction. Therefore, it is imperative for teachers to become aware of the social processes that create lower-track students who generally exhibit alienation, resistance, and disengagement in the classroom.

There are numerous issues combining to create these attributes in the typical lower-track student. Their alienation can be considered a result of years of socialization and being taught through a differentiated curriculum that has limited their future opportunities. Students who feel this alienation turn to peer groups with the similar school experiences, developing their own series of rules to regain power and respect (among their peers) that they feel the schools have taken from them. Finally, many students have become disengaged from the achievement ideology because they are stuck within lower-track classrooms, coupled with the marginalization of their home-based discourse.

Ideas on Discourse

This study exposed the power that lower-track student sub-cultures wield within their ranks. Teachers need to be aware of these sub-cultures and how they impact the

actions of lower-track students as well as student histories of alienation, resistance, and disengagement. The challenge for teachers - how to introduce the ideas of the NSES while simultaneously not losing sight of students home-based discourse?

Teachers need to understand the home-based discourse that students bring to class. This understanding give teachers a clearer picture of what their students are able to do and gives insight to the merit behind student discussions. Furthermore, if continued marginalization of students is to be avoided teachers must find value in the ways students talk and communicate. This can be an extremely difficult task, but without this effort student disengagement will continue to grow.

Once teachers understand student discourse, they can begin to try and alter discourse expectations of their students. Teachers need to make the rules of new discourse expectations explicit, and understanding the initial student discourse will make that transition easier. Micheals and O'Conner (1990) argue that if students come to school without the dominant accepted discourse already in place then it will not be acquired during school. Thus, teachers need to make a concerted effort to help students understand the rules of the accepted discourse.

Teachers need to break from previous classroom experience to truly embrace the idea of making scientific knowledge accessible to a diverse population of students (Floden, et al, 1987). Teachers will have to reflect on their practice to make determinations and assessments of their teaching in the context of diverse student groups. This will help teachers become involved in improving their own practice and create a greater feeling of professionalism with teachers.

Expectations of Teachers

Teachers are expected to be able to change the discourse of students, break from experience, and inspire students who are alienated from the whole idea of school. It is an unfair expectation to believe that teachers will be successful without training in the methods to carry out these ideals. Teacher training for lower-track students does not incorporate these ideas and teachers are left to struggle alone in these classrooms, trying to meet unreal expectations. In general, the teachers who have the least experience and training are usually stuck in lower track classrooms (Oakes, 1985). Lower-track teachers are overburdened by a system that has failed not only students but teachers as well. This idea was evidenced by a quote from Mr. Smith when asked about how he would improve the situation in his class, "If I knew what to do, I would do it."

Effects of Tracking

The practice of homogeneously sorting students creates destructive belief systems concerning general track students in the eyes of the school, teachers, counselors, and even the students themselves. Many times placement within these tracks is based on standardized tests, which are biased in favor of students who have command of the dominant school discourse (Kunjufu, 1985). Once these students land in the lower-track they are rarely if ever promoted out of the low-track, in part because the lower-track classes are not designed to help students move back into the regular track (Oakes and Guiton, 1995).

Tracking has a profound impact on how students view their own school careers and themselves. These students are very aware of the ways the school and teachers view them, in terms of ability and future opportunities. They also realize the environment of the school itself offers little hope for them to improve their position within the school, which acts to strengthen ties to their sub-culture identity. Given the widespread and highly accepted practice of tracking, it is not likely that un-tracking schools would be possible, much less effective. Rather, schools need to improve the training of teachers to help them cope with the issues effecting lower-track instruction and raising expectations for lower-track students.

REFERENCES CITED

Anyon, J. (1981). Social Class and School Knowledge. Curriculum Inquiry. No.11: pp. 3-42.

Anyon, J. (1997). Ghetto Schooling: A Political Economy of Urban Educational Reform. New York, NY: Teachers College Press.

Ballenger, C. (1994). Argumentation in a Haitian Bilingual Classroom. Unpublished Manuscript. TERC.

Bogdan, R. C., and Biklen, S. K. (1982). Qualitative Research for Education: An Introduction to Theory and Methods. Boston, MA: Allyn and Bacon, Inc.

Bourdieu, P., and Passeron, J.C. (1977). Reproduction in Education, Society and Culture. Beverly Hills, CA.: Sage.

Bowles, S., and Gintis, H. (1976). Schooling in Capitalist America. New York: Basic Books.

Brown, D. C. (1996). Why Ask Why: Patterns and Themes of Causal Attribution in the Workplace. *Journal of Industrial Teacher Education*. Vol. 33, No. 3, pp. 47-65.

Connell, R. W. (1993). Schools and Social Justice. Philadelphia, PA: Temple University Press.

Cronbach, L. J. (1975). Beyond Two Disciplines of Scientific Psychology. *American Psychologist*. Vol. 30, No. 2, pp. 116-127.

Cross, W. E. (1971). The Negro to Black Experience Towards a Psychology of Black Liberation. *Black World*. Vol. 20, No. 9, pp. 13-27.

Dauber, S., Alexander, K., and Entwisle, D. (1996). Tracking and Transitions through the Middle Grades: Channeling Educational Trajectories. *Sociology of Education*. Vol. 69, No. 4, pp. 290-307.

Delpit, L. (1988). The Silenced Dialogue: Power and Pedagogy in Educating Other People's Children. *Harvard Educational Review*. Vol. 58, No. 3: pp. 280-298.

Delpit, L. (1995). Other People's Children: Cultural Conflict in the Classroom. New York, NY: The New Press.

Eckert, P. (1989). Jocks and Burnouts: Social Categories and Identity in the High School. New York, NY: Teachers College Press.

Eichelberger, T. R. (1989). Disciplined Inquiry: Understanding and Doing Educational Research. White Plains, NY: Longman, Inc.

Eisner, E. W. (1991). The Enlightened Eye: Qualitative Inquiry and the Enhancement of Educational Practice. New York, NY: Macmillan Publishing Company.

Erlandson, D., Harris, E., Skipper, B., and Allen, S. (1993). Doing Naturalistic Inquiry: A Guide To Methods. Newbury Park, CA: Sage Publications, Inc.

Floden, R., Buchmann, M., and Schwille, J. (1987). Breaking with Everyday Experience. *Teachers College Record.* Vol. 88, No. 4, pp. 485-506.

Fordham, S. and Ogbu, J. (1986). Black Students' School Success: Coping with the Burden of Acting White. *The Urban Review.* Vol. 18, No. 3, pp. 176-206.

Gamaron, A. (1987). The Stratification of High School Learning Opportunities. *Sociology of Education.* Vol. 60, pp. 135-155.

Gamoran, A. (1989). Measuring Curriculum Differentiation. *American Journal of Education.* Vol. 97, pp. 129-143.

Gee, J. (1989). What is Literacy? *Journal of Education.* Vol. 171, No. 1, pp. 18-25.

Gee, J. (1990). Social Linguistics and Literacies: Ideology in Discourses. Briston, PA: Falmer Press.

Gibbs, J., and Huang, L. (1989). Children of Color: Psychological Interventions with Minority Youth. San Francisco, CA: Jossey-Bass Publishers.

Giroux, H. (1988). Schooling and the Struggle for Public Life. Minneapolis: University of Minneapolis Press.

Giroux, H. (1996). Living Dangerously: Multiculturalism and the Politics of Difference. New York, NY: Peter Lang Publishers.

Hitchcock, G., and Hughes, D. (1989). Research and the Teacher: A qualitative Introduction to School-Based Research. New York, NY: Routledge Inc.

Hoepfl, M. C. (1997). Choosing Qualitative Research: A Primer for Technology Education Researchers. *Journal of Technology Education*. Vol. 9, No. 1, pp. 1-14.

Hopkins, R. (1997). Educating Black Males: Critical Lessons in Schooling, Community, and Power. Albany, NY: State University of New York Press.

Jeter, J. (1998). Magnet School Leaves Students Poles Apart. The Washington Post.

Kennedy, M. (1998). Education Reform and Subject Matter Knowledge. Journal of Research in Science Teaching. Vol. 35, No. 3: pp. 249–263.

King, JR., A., and Brownell, J. (1966) The Curriculum and the Disciplines of Knowledge: A Theory of Curriculum Practice. *The Disciplines as Communities of Discourse*. pp. 67-97. New York: John Wiley and Sons.

Kreisberg, S. (1992). Transforming Power: Domination, Empowerment, and Education. Albany, NY: State University of New York Press.

Krueger, R. A. (1994). Focus Groups: A Practical Guide for Applied Research (2nd Edition). Thousand Oaks, CA: Sage Publications, Inc.

Kunjufu, K. (1985). Countering the Conspiracy to Destroy Black Boys. African American Images Publisher.

Lemke, J. (1990). Talking Science: Language, Learning, and Values. Norwood, NJ: Ablex Publishing Corporation.

Lewis, M. (1993). The Culture of Inequality. Amherst, MA: University of Massachusetts Press.

Lincoln, Y. S., and Guba, E. G. (1985). Naturalistic Inquiry. Beverly Hills, CA: Sage Publications, Inc.

Lofland, J., and Lofland, L. H. (1984). Analyzing Social Settings. Belmont, CA: Wadsworth Publishing Company, Inc.

McLaren, P. (1994). Life in Schools: An Introduction to Critical Pedagogy in the Foundations of Education. White Plains, NY: Longman Publishing Group.

Mehan, H., Villanueva, I, Hubbard, L., and Lintz, A. (1996). Constructing School Success: The Consequences of Untracking Low-Achieving Students. New York, NY: Cambridge University Press.

Micheals, S. (1985). Hearing and the Connections in Children's Oral and Written Discourse. Journal of Education. Vol. 167, No. 1, pp. 35-56.

Micheals, S., and O'Conner, M.C. (1990). Literacy as Reasoning Within Multiple Discourses: Implications for Policy and Educational Reform. Paper presented at The Council of Chief State School Officers 1990 Summer Institute. Newton, MA.

Mishler, E. (1986). Research Interviewing: Context and Narrative. Cambridge, MA: Harvard University Press.

Morgan, D., and Krueger, R. (1993). When to Use Focus Groups and Why, *in* Morgan, D. (ed.) Successful Focus Groups: Advancing the State of the Art. Newbury Park, CA: Sage Publications, Inc. pp. 3-19.

Morgan, H. (1980). How Schools Fail Black Children. *Social Policy*. Jan.-Feb., 1980, pp. 49-54.

National Research Council, (1996). National Science Education Standards. Washington, D.C.: National Academy Press.

Oakes, J. (1985). Keeping Track: How Schools Structure Inequality. New Haven, CT: Yale University Press.

Oakes, J. (1990). Multiplying Inequalities: The Effects of Race, Social Class, and Tracking on Opportunities to Learn Mathematics and Science. Santa Monica, CA. Rand Corporation.

Oakes, J., and Guiton, G. (1995). Matchmaking: The Dynamics of High School Tracking Decisions. *American Educational Research Journal*. Vol. 32, No. 1, pp. 3-33.

Ogbu, J. (1978). Minority Education and Caste: The American System in Cross-Cultural Perspective. New York, NY: Academic Press.

Page, R. (1991). Lower-Track Classrooms: A Curricular and Cultural Perspective. New York, NY: Teachers College Press.

Patton, M. Q. (1990). Qualitative Evaluation and Research Methods (2nd Edition) Newbury Park, CA: Sage Publications, Inc.

Perkinson, H. (1993). Teachers Without Goals: Students Without Purpose. New York, NY: McGraw-Hill, Inc. Publishers.

Riordan, C. (1997). Equality and Achievement: An Introduction to the Sociology of Education. Reading, MA: Addison-Wesley Educational Publishers, Inc.

Rist, R. (1979). Desegregated Schools: Appraisals of an American Experience. New York, NY: Academic Press.

Rodriguez, A. (1997). The Dangerous Discourse of Invisibility: A Critique of the National Research Council's National Science Education Standards. Journal of Research in Science Teaching, Vol. 34, No. 1, pp. 19-37.

Rosebery, A. S., Warren, B., and Conant, F. (1990). Appropriating Scientific Discourse: Findings from Language Minority Classrooms. Bolt Beranek and Newman, Inc.

Rosenbaum, J. (1976). Making Inequality: The Hidden Curriculum of High School Tracking. New York, NY: John Wiley and Sons Publishers.

Schriver, J. (1993). Human Behavior and the Social Environment: Shifting Paradigms in Essential Knowledge for Social Work Practice. Boston, MA: Allyn and Bacon Publishers.

Seidman, I., E. (1991). Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences. Columbia University, NY: Teachers College Press.

Solomon, P. R. (1992). Black Resistance in High School: Forging a Separatist Culture. Albany, New York. State University of New York Press.

Stake, R. E. (1978). The Case Study Method in Social Inquiry. *Educational Researcher*. Vol. 7, No. 2, pp. 5-8.

Steele, C.M. (1992). Race and the Schooling of Black Americans. The Atlantic Monthly, Vol. 269, No. 4, pp. 68-78.

Strauss, A., and Corbin, J. (1990). Basics of Qualitative Research: Grounded Theory Procedures and Techniques. Newbury Park, CA: Sage Publications Inc.

Van Manen, M. (1990). Researching Lived Experience: Human Science for an Action Sensitive Pedagogy. Albany, NY: State University of New York Press.

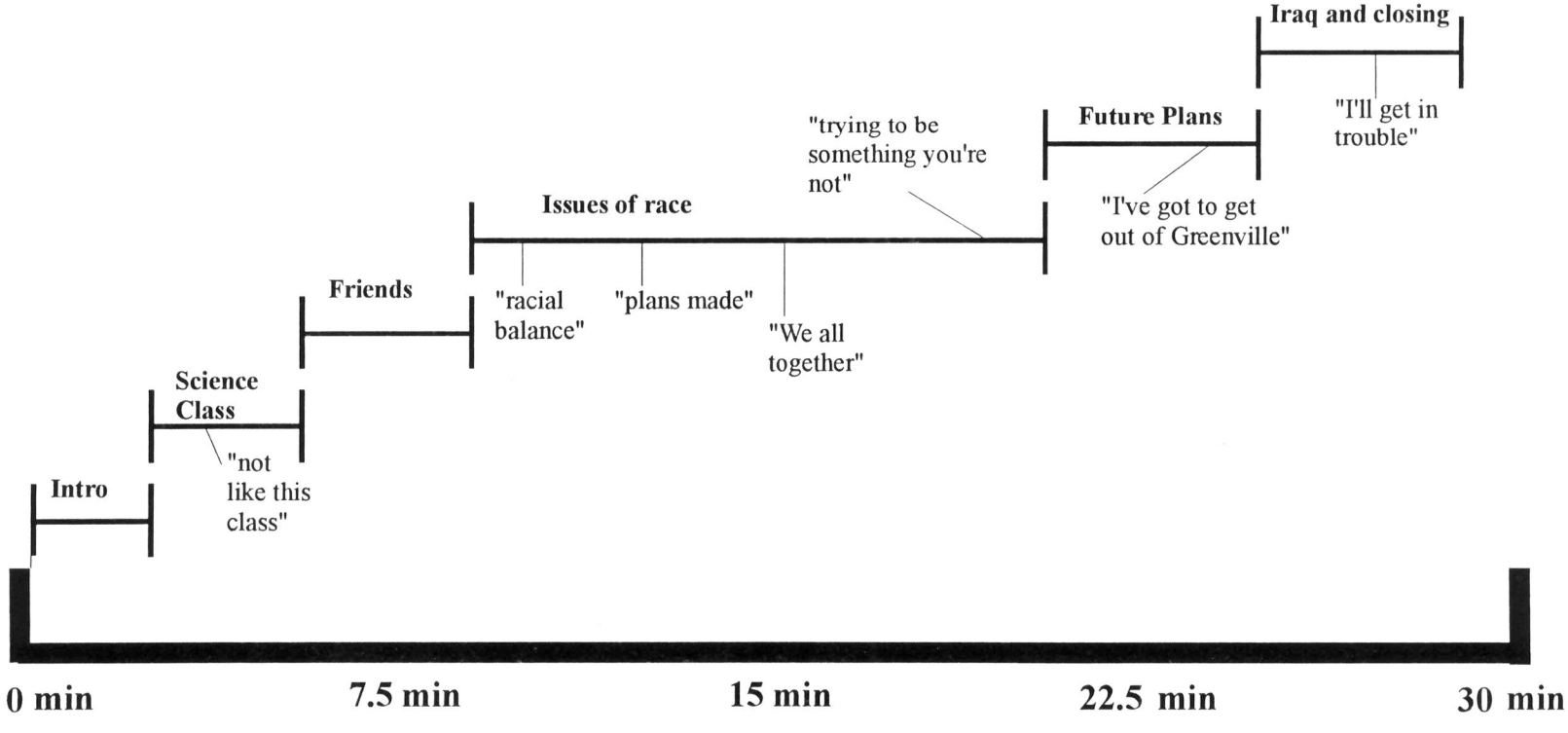
Wexler, P. (1992). Becoming Somebody: Toward a Social Psychology of School. Wasgington, D.C.: The Falmer Press.

Wheelock, A. (1992). Crossing the Tracks: How "Untracking" Can Save America's Schools. New York, NY: The New Press.

Wheelock, A. (1994). Alternatives to Tracking and Ability Grouping. American Association of School Administrators. Alexandria, Va.

Willis, P. (1981). Learning to Labor: How Working Class Kids Get Working Class Jobs. New York: NY. Columbia University Press.

APPENDIX A - FOCUS GROUP ONE



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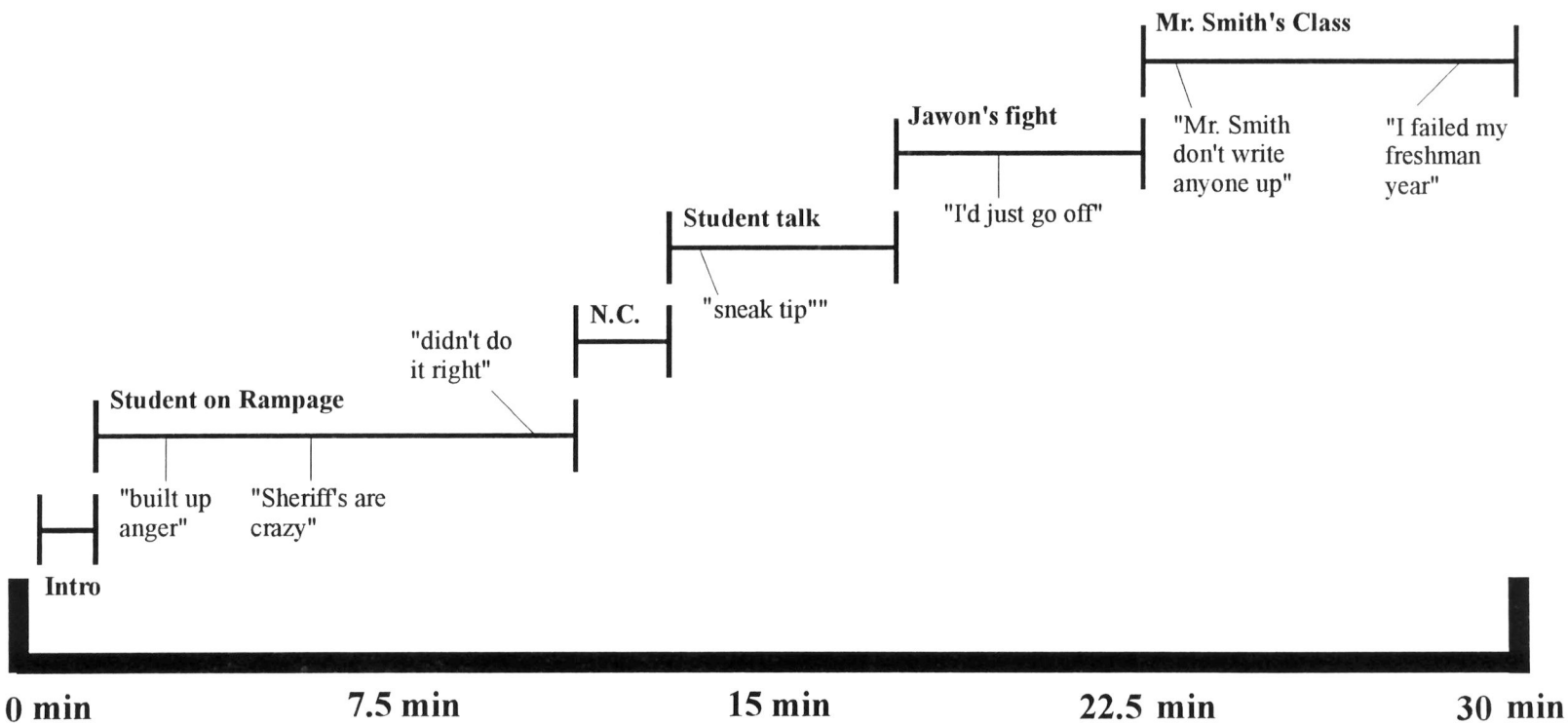

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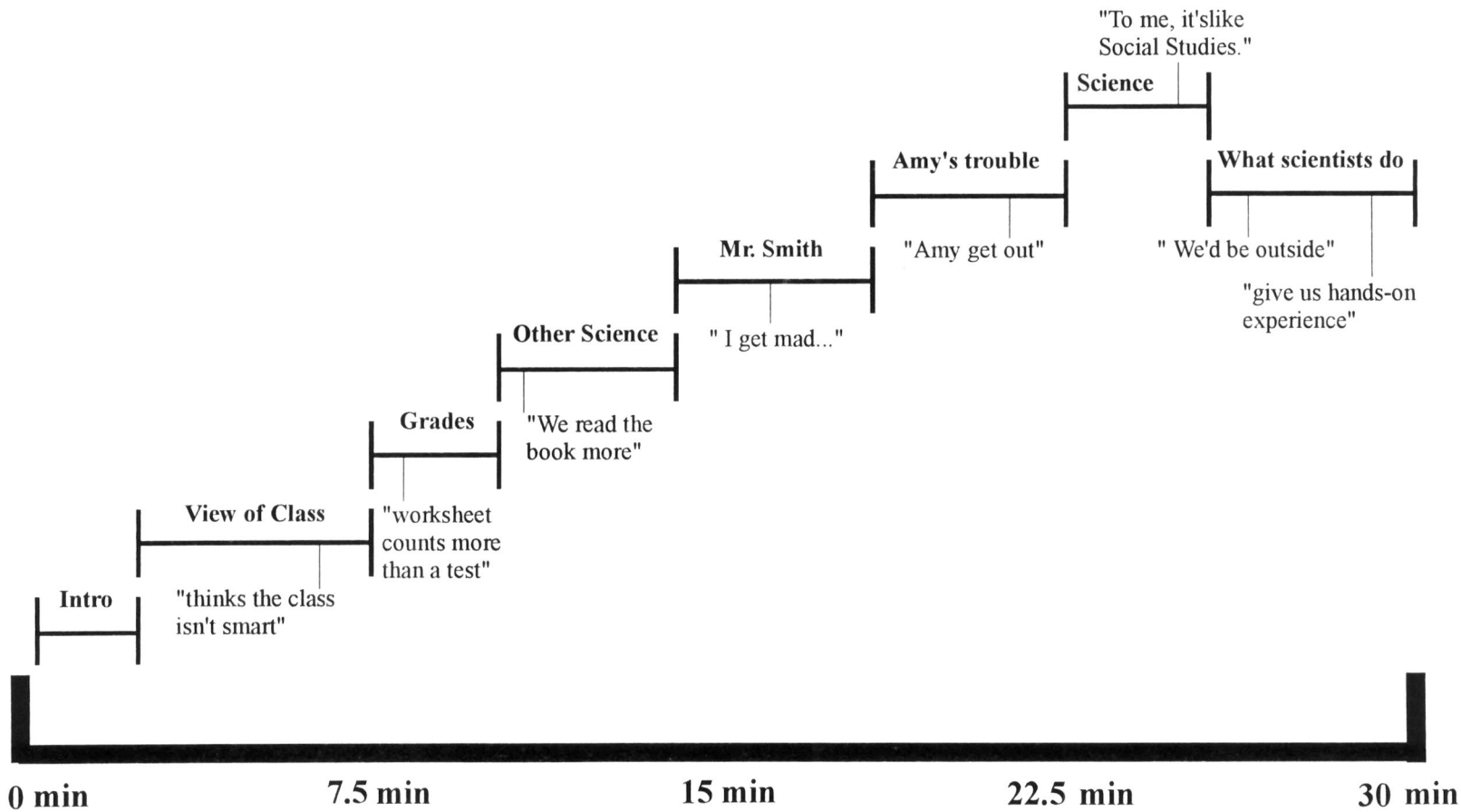

APPENDIX D - FOCUS GROUP FOUR