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The Process of Tracking in Mathematics in Box Elder School District

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THE PROCESS OF TRACKING IN MATHEMATICS IN BOX ELDER SCHOOL DISTRICT

by

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ABSTRACT

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by

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Educational policymakers have used tracking to instruct students in a variety of subjects, including mathematics. Tracking, which has also been called ability grouping, is a process by which students in the same grade are placed into different classes based on academic ability. Few educators and sociologists have looked at the process by which students are placed in different mathematics tracks. The research design of this study focused on accumulating, evaluating, and reporting the understanding and observations of 12 teachers and 4 counselors as they discussed their knowledge and involvement in the mathematics placement procedures from the intermediate and middle school levels in northern Utah. The data revealed that in addition to the official placement policies there were other factors that influenced the math placement. Those factors were teacher input, parental participation, and student involvement in the educational process. Educational administration, counselors, and teachers can use the results of this study to create more equitable placement policies and procedures for all students.

(73 pages)

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CHAPTER 1

INTRODUCTION

The mission of the Utah State Board of Education is to "Provide leadership, vision, and advocacy so that all students have educational opportunities to meet their potential and achieve competency" (Utah State Board of Education, 2006). For this mission to be achieved, the community of educators needs to look at how students are placed into higher or lower tracks in education, since this is a major mechanism by which racial inequality in education can occur (Burris, Heubert, & Levin, 2006; Grossman & Ancess, 2004; Hallinan, 1990; Hill, 2004; Oakes, 1985; Oakes & Wells, 1998; Schoenfeld, 2002; Welner & Oakes, 1996). Tracking, which has also been called ability grouping, is a process by which students in the same grade are placed into different classes based on academic ability. Often, this process relegates students of color disproportionately into lower tracks. Many scholars question the continued achievement gap between white students and students of color. By looking at the tracking process in education, we may be able to better understand why this gap persists.

Mathematics is a particularly important area to understand tracking since achievement in this field of study is seen as the gatekeeper for students' success academically (Grossman & Ancess, 2004; Rech & Harrington, 2000). Therefore, in this study, I explore the criteria and decision-making processes behind the placement of students in mathematics tracks. This study will help clarify for parents, students, and educators how students are placed into different tracks. As well, it will allow teachers, counselors, and administrators to become aware of any shortcomings in the current system of tracking. Since the criteria in tracking are negotiated at the level of the school

district and within particular school settings, we need to understand the process by which teachers, administrators, and parents make decisions that will have major implications for students' educational careers.

It has been widely acknowledged that people of color are under-represented in the fields of math, engineering, and science (Clark, 1999; National Science Foundation, 2007; Schoenfeld, 2002). One of the reasons that people of color have been underrepresented in these fields is that they have not been sufficiently prepared for these fields by the educational system. These students often do not have the school resources that their white counterparts have. For example, many students of color attend schools that are understaffed and have limited access to resources. They are also tracked out of math and science courses by teachers and counselors. As such, there have been programs implemented at the middle school and high school levels to introduce these fields to students of color. One such program is Math, Engineering and Science Achievement (MESA), which allows students of color to participate in different activities that might encourage them to consider studying these fields. Still, one of the major factors determining whether students of color go into science, math, or engineering is if they are placed in college-bound math and science tracks. Indeed, research has shown that students are more prepared for college when they are placed on the upper track (Ansalone & Biafora, 2004; Hallinan, 1994; Heck, Price, & Thomas, 2004; Oakes, 1995; "Report Highlights Importance of Middle School Math," 2003).

The process of tracking needs to be examined to determine if college preparation is equitably being distributed to all students regardless of race and ethnicity. We cannot help students of color become professionals in the areas where math is a key component

if we do not satisfactorily prepare them when they are in elementary and secondary school. These students are disadvantaged when it comes to college and future career opportunities when they have been channeled into lower track math and science courses. Although ability may play some role in this tracking process, it may also be that many direct and indirect social processes are at play here that restrict students of color to dead-end educational tracks.

CHAPTER 2

LITERATURE REVIEW

Arguments for Tracking

Some researchers believe that tracking is the best way to serve all students because it provides a more focused curriculum and level of instruction. As well, it helps students advance at their own rate with other students with similar abilities (Kulik, 1992; Loveless, 1998; Tieso, 2003). Proponents of tracking acknowledge that there are aspects of the school environment that educators need to improve, but the overall opinion of tracking is favorable: "The tradeoff is not between closing the gap between low-ability and high-ability students and raising overall student test scores; it is between playing with classroom organization and improving what happens once the classroom door is shut" (Jaeger & Hattie, 1995, p. 219). These studies admit that, in tracking, there are "winners and losers" (Brewer, Rees, & Argys, 1995, p. 214). But, such studies contend, tracking improves student outcomes on average:

> Although students in lower tracks would realize achievement gains by being placed in a heterogeneous class, this gain would be at the expense of students placed in higher-level tracks. Our estimates imply that detracking all students currently enrolled in homogenous classes would produce a net 1.7% drop in the average mathematics test score. (Brewer, Rees, & Argys, p. 214)

In sum, proponents argue that if we get rid of tracking, the result will be "the degradation of educational opportunities for students identified as gifted and talented and the lack of concern for students identified as needing extra assistance" (Tieso, p. 29).

Tieso (2003) identified three advantages to tracking in education. First, she argues that grouping students according to ability is temporary in nature. This

arrangement permits students to move in and out of different groups depending on their ability and achievement. Second, she argued that teachers are able to adjust their curriculum based on the needs and abilities of the students. The third benefit of grouping or tracking is reducing heterogeneity in the classroom "without affecting the self-esteem of those students in the lowest achieving groups" (Tieso, 2003, p. 30). Tieso (2000) also revealed in a different study that "the implementation of enhanced or differentiated curriculum and various flexible grouping arrangements can have a significant positive impact on students' mathematics achievement without harming students' self-efficacy and self-concept as perceived by students and teachers" (p. 128).

In a cross-national comparison of tracking, Scott (1993) concluded that "in practice untracking homogenizes academic expectation" (p. 80). By "untracking" (or "detracking"), Scott referred to the reverse of tracking, whereby students of different abilities are placed in the same classroom under the same teacher. Scott provided evidence suggesting that countries that use tracking produce students that are more marketable in and prepared to succeed in the economy. He further attributed the overall decline in SAT scores in the United States to the movement of detracking. Likewise, Kariya and Rosenbaum (1999) discovered that detracking had unintended consequences. They argued that when a school or district is detracked, it suffers from "bright flight," wherein the bright or gifted students leave the public school arena and enroll in private schools. In private schools, these students would be in homogeneous groups and would be able to advance more quickly in comparison to heterogeneous groupings. They also stated that lower track students can find a way to the higher tracks if they put forth the effort to attend extra classes and instruction to help them "jump the tracks." Finally, they

established that with extra instructional programs, there were more minority and non-minority students in honors courses and a reduction in "bright flight" (Kariya & Rosenbaum). Van Haneghan, Pruet, & Bamberger (2004) also linked detracking to teacher burnout and detachment from learning among high and low achievers.

Given the overall acceptance of tracking, the focus of much of the research in this area has been on how to improve instruction at all tracking levels. Such research recognized the importance of having experienced, knowledgeable teachers instructing all the tracks so that students will gain a better understanding of mathematics (Grossman & Ancess, 2004). For example, Wenglinsky (2004) argued that "the most important finding is not that the particular practices found to close the gap do so, but that what teachers do in the classroom as a whole makes such a difference to the gap" (p. 17). Theoretically, when students gain a better grasp of mathematical concepts, their confidence in mathematics will improve and their attitude toward continuing in mathematics will be more positive. Grossman and Ancess (2004), for example, suggested that the distinction between an after-school "enrichment" program and an after-school "remediation" program lies in the teacher.

Indeed, the role of the teacher cannot be stressed enough. Even studies that are in favor of detracking note that a teacher in any classroom can make a difference to his or her students. One study showed that the better performance of students in upper track classes "may very well stem from rigorous curricula and high expectations, not from the grouping practices in which students are sorted and selected. Strong teaching also plays a role" (Burris et al., 2006, p. 132). Many studies attributed the increase of student achievement to the high expectations and hard work of teachers (Hrabowski, 2002;

Jaeger & Hattie, 1995; Loveless, 1998; Resnick & Nolan, 1995). Curriculum alignment and "sustained professional development can make a difference" according to Schoenfeld (2002, p. 20). He further stated that "when teachers are treated like professionals and they are given the opportunity to develop their skills and understandings over time, the results can be significant improvements in students' mathematical performance" (Schoenfeld, p. 20).

Role models can also play a part in helping students of color excel in mathematics. The mathematics departments may still be seen as a "'white man's world," which by itself may serve as a detriment to the academic performance of minorities (Rech & Harrington, 2000). Families are particularly important in this regard (Hraboski, 2002). Tracking advocates believe that not only teachers need to have high expectations of their students, but parents need to as well. Families are a "key factor - and possibly the most important one - in students' developing and sustaining education and career aspirations from childhood to young adulthood" (Cooper, Chavira, & Mena, 2005, p. 417). If families stress the importance of mathematical accomplishment, there will be more esteem for high achievement and a continued desire to excel. Parents often times do not even know what tracking practices are in place in their child's school or how to help their child in their placement (Oakes, 1995).

Arguments Against Tracking

There are three themes running throughout the literature on the detriments of tracking and its effects on students. The first theme is that students have fewer educational opportunities when they are placed in the lower tracks. In connection with

limited educational opportunities, students in the lower tracks are often assigned to teachers that are poorly qualified and inexperienced. Third, the students placed in lower tracks are seen by others, as well as by themselves, as not having the "ability" to succeed in math,

which can lead to lower expectations.

Many opponents of tracking downplay the role of innate intellectual abilities and question the objective nature of academic assessments. Ogbu (1994), for example, focused on racial stratification, defined as the "hierarchical organization of socially defined 'races' or groups on the basis of assumed inborn differences in status honor or moral worth, symbolized in the United States by skin color" (Ogbu, pp. 268-269). Accordingly, tracking in school is not based on one's ability or how much a student knows, but by how much another person in authority will relate the student's skin color with the perceived innate characteristics of that race. Oakes agreed with Ogbu: "Educators are making some rather global judgment about how smart students are either in a subject field or across a number of subjects" (cited in O'Neil, 1992, p. 18). Elsewhere, she and others argued that "schools' responses to differences in intelligence are themselves social constructions, rather than self-evident implications from established scientific knowledge" (Oakes, Wells, Jones, & Datnow, 1997, p. 483).

Proponents of detracking believe that most students have the ability to succeed if given the educational opportunity (Sternberg & Davidson, 1986). In order for all students to feel as if they will succeed in school, including in their mathematics courses, they need to believe that they are all on a level playing field. They need to see themselves in a way that is positive. According to Cooley, "[I]n imagination we perceive

in another's mind some thought of our appearance, manners, aims, deeds, character, friends, and so on, and are variously affected by it" (Cooley, 1902, p. 184). In other words, we perceive ourselves according to the reactions of other people. Along with this idea is new evidence that suggests that a student's belief in his or her own academic ability comes before he or she actually performs the work, and not the other way around. "The findings say that supportive teachers and clear and high expectations are key to ensuring that students feel in control and confident about their ability to learn" (Lewis, 2006, p. 565).

The majority of detracking articles argue that "school desegregation facilitated classroom segregation" (Scott, 2001, p. 47), whereby fewer minority students were enrolled in classes with higher academic standards (Oakes & Guiton, 1995). Oakes and Wells found that as recently as 1998, the majority of lower-track students come from low socioeconomic status and are people of color (1998). Likewise, Entwisle and Alexander (1992) showed that socioeconomic status was the most important factor in explaining student scores in mathematics in Baltimore, Maryland. Finally, Anderson (1994) found that students of color are "still overrepresented in the vocational tracks and underrepresented in academic programs, especially those related to math and science" (p. 95). The persistence of inequality between students of color and white students stems, in part, from a stratified educational opportunity structure (Gamoran, 1992; Ogbu, 1994). Once school segregation was outlawed, educators created a system in which segregation was achieved within the school and within particular classrooms. Tracking was, and is, the major vehicle to this end.

According to other studies, the lower track classes are typically taught by the most inexperienced, poorly trained teachers of the school (Hallinan, 2004). Hallinan argued, for example, that teachers in lower track classrooms have low expectations for themselves and this translates into lower expectations for their students. Indeed, perceived ability can be very subjective. It is a teacher's opinion about the capabilities of a student that allow the student to learn and succeed in education (Oakes et al., 1997). Teachers of lower track classes often water down the curriculum to push the kids through, not to create "classroom environments conducive to learning… opportunities to earn extra 'grade points' that can bolster their grade point averages…[and] courses that would qualify them for college entrance and a wide variety of careers as adults" (Oakes, 1995, p. 687). In a sense, the more experienced, master teachers are not "wasted" on students who are perceived as unable or unwilling to do the work (Kershaw, 1992).

Another consequence of tracking that could be a detriment to the educational field is burnout and high teacher turnover in lower track classes. The teaching in these lower tracks is seen as entertaining or simply babysitting rather than educating. Research by Houtte (2006) found that job satisfaction was worse for teachers of lower track students. Oakes (1985) also stated that lower tracks are the "dumping grounds" for low-income and poorly behaved students. Along with enriched educational opportunities for students, eliminating tracks would allow students to be more informed about their options in secondary school as well as college. One study found that students who attended detracked schools had more social networks that "inform[ed] them about connections between education and occupation" (Welner & Oakes, 1996). This also applies to

desegregated classrooms. Not only would they have more educational opportunities, but more diverse social networks as well.

To review, many educators are very subjective when placing students. A survey done in 1991 found that about one-half of white Americans who were polled believed that African American and Latino students were "likely to be less intelligent than whites. In addition, 37% of white Americans polled believed that African Americans could not be motivated to learn" (Welner & Oakes, 1996, p. 451). This could be a factor in the persistent overrepresentation of minorities in lower academic courses. Another study contends that "non merit-based criteria may influence track placement" (Powell, 2003, p. 17). By non merit-based criteria, Powell means that the criteria that teachers, counselors and administrators use to place students in different tracks can be based on subjective assessments of student ability. Students with similar scores and grades can be placed on different tracks because of teacher attitudes and beliefs, thereby nullifying arguments for the benefits of tracking based on readiness for a particular level of instruction. Indeed, many researchers have found a great deal of track misplacement. One study done by Burris and colleagues (2006) found that in Rochester, New York, such misplacement resulted in some high achievers being placed in low achieving classroom, as well as some low achievers being placed into high achieving classrooms. They argue that if an average achiever (e.g. a C+ student) was to be misplaced into a low achieving math class their "chances of completing the two college-preparatory mathematics courses was 2%" (Burris et al., pp. 107-108).

Another major argument for detracking schools is that the perceptions that are placed upon the students in the lower tracks become internalized. Students of color start

to believe that they are not good at math and enroll in fewer math courses in high school. Often, students who feel as if they are lower achievers because they are on the lower tracks in mathematics take the basic requirements to graduate, which leads them to be less prepared for college. As Rech and Harrinton (2000) explained: "There have been those who are 'excused' from learning math to the point of proficiency because it was presumed to be too difficult for them and typically they have been young women and minorities" (p. 63). To help these students that are seen as at-risk or low-achievers, an "enriched, accelerated curriculum is more beneficial" (Burris et al., 2006, p. 132) than the customary remedial program that slows down instruction. If a school has a negative outlook on lower track students and simultaneously highlights the value of good grades, graduating high school, and involvement in college preparation, this will create opposition from lower track students and could lead these students to quit school (Kershaw, 1992). In addition, these lower track students will have a negative outlook on the lower track as well, which could lead them to dread mathematics.

Another cited detriment of tracking is that once students are placed in a lower track, they have difficulty getting out. In mathematics especially, it is very difficult to "jump" the tracks and very difficult also to ride two tracks at once. There are a few ways to jump the tracks, but it usually requires monetary resources, such as tutoring, to which students of color and poor students have less access. With these limited resources and the lower placement, these students will not have college preparation and it will be more difficult for them to succeed under these circumstances. One study found that taking advanced mathematics courses while still in high school was "more strongly associated with successful completion of college than any other factor, including high school grade

point average and socioeconomic status (SES)" (Burris et al., 2006, p. 106). Another study found that tracking into a lower track "clearly leads those students to disenfranchisement in a class system where there are clear differences between the 'haves' and the 'have-nots'" (Fiedler, Lange, & Winebrenner, 2002).

How does success in mathematics education occur? According to proponents of detracking, it starts by placing all students in rigorous mathematics courses. Burris et al. (2006), for example, found that when all students are placed in rigorous mathematics courses, more students went on to take advanced math courses and more students passed the courses because of "universal acceleration" (p. 117). By universal acceleration, Burris et al. mean that every student would be placed on the more rigorous track for mathematics. The more exposure students receive in preparation for college, the more educational opportunities and career prospects are available to them (Brown, Carter & Harris, 1978; Burris et al.). In response to the argument that schools would disadvantage the higher achieving students by removing tracks, Burris et al. found the following:

> Initial high achievers took more advanced mathematics courses, as did other groups, more initial high achievers took advanced placement calculus exams, as did other groups, and more initial high achievers earned higher scores on the advanced placement calculus exams, as did other groups. (p.129)

It is well said that "If some children matter more to us than others, then all children are valued only conditionally" (Kohn, 2005, p. 20). If schools place a greater emphasis on the higher achievers, they are not helping all students in education.

The Process of Tracking

Regardless of the arguments for and against tracking, the evidence suggests that students of color typically find themselves on lower tracks, especially in mathematics and science. As such, tracking has become a major mechanism by which minorities are channeled away from fields in which they have historically been underrepresented. Therefore, a more provocative question may be how the actual process of tracking occurs, or by what criteria students are placed in distinct educational tracks. This question, however, has received much less attention in the literature.

In general, the process of tracking varies from state to state, and school district to school district. Often, and in addition to considering grades and teacher recommendations, students are given a standardized test to place them into tracks. One of the most poignant points about standardized achievement tests is that these tests may "be more a reflection of poor schooling rather than lack of ability" (Brown et al., 1978, p. 478). Another study looked at the ACT and its ability to predict the mathematical ability for African American males. The study found that the ACT was not a good predictor of mathematical ability for this sub-population (Rech & Harrington, 1994). This strengthens the argument that schools cannot rely on standardized tests alone to place students in tracks, especially students of color. One test is not enough "to make promotion, graduation, or tracking decisions" (Hoff & Archer, 2000, p.12).

As was mentioned earlier, much of the tracking is in the hands of educators, whether it is counselors, teachers, or administrators. And subjective criteria, including racial-ethnic prejudice and stereotypes, may play some role in making placement

decisions. Spielhagen (2006) has suggested, for example, that many teachers get frustrated with standardized tests and may use their own subjective judgments to override the placement policy. Some studies also touch on the role that parents play in this process. For example, Loveless (1998) found that although the official criteria for admittance into high ability classrooms are prerequisites, grades, and recommendations, tracking decisions can be overridden by parents and students. Specifically, Loveless found in his sample of Baltimore, Maryland public schools that "more than 80% of schools allow students to elect their course level provided prerequisites have been met, and many schools offer a waiver option for parents who insist, despite the school's recommendation, that their child enroll in a high track class" (Loveless). Apart from these studies, very few researchers discuss in detail the actual process by which students are tracked.

The Present Study

Based on past research on educational tracking, I expect to find more minorities and low-income students in lower mathematics tracks. But the present study also explores how these students are channeled into these lower mathematics tracks. I suggest that mathematics placement decisions are affected by objective and subjective criteria. In particular, I suspect that prejudices about minorities may have a conscious or unconscious influence on teachers, counselors, and administrators when they make student placement decisions in mathematics. As well, there may be unintended effects of the official district policy that place a disproportionate number of minorities in lower tracks, such as an over-reliance on standardized test scores, which may or may not be an

accurate reflection of student ability and potential. Finally, I contend that white students from middle and upper class backgrounds will find their way into higher mathematics tracks by virtue of their social resources and other informal mechanisms, such as their parents intervening in placement decisions to insist their child be placed in a higher track.

CHAPTER 3

METHODS AND PROCEDURES

Because the tracking process varies by state and by school district, I investigate how one particular district in Utah – Box Elder School District – places students in different mathematics tracks. Very few case studies have been done on the actual process of tracking. This, combined with the fact that some of the earliest research on tracking was done in Utah (Kulik, 1992), makes Utah a suitable and interesting place to investigate this issue. As well, my occupation as a mathematics teacher in this district permits me unusual access to statistics and personnel for this study. I focus on tracking in intermediate and middle schools in the district because this is one of the first and most critical times in the mathematics tracking process. As was mentioned in the literature review, once these students are on these mathematics tracks, they rarely move between tracks. I limit my focus to tracking in mathematics both because of my access to mathematics educators and because tracking policies vary for science and mathematics. The overall purpose of this study is not generalizabililty to all school districts. Rather, this research is investigative, with the intent of exploring tracking as a social practice. It is my hope that it will generate questions for future research to explore.

The Study Area

The schools in this study are in the Box Elder School District, which services all of Box Elder County. Box Elder County is located in northwestern Utah and includes Brigham City and multiple small towns. The school district consists of two high schools,

two middle schools, two intermediate schools, and 16 elementary schools. There is also one alternative high school and one early learning center.

Some attributes of the Box Elder County's population may be dissimilar from other places in the country, but there are many similarities between this case and other districts in the state of Utah, as well as other rural communities across the country. Table 1 compares the demographics of this county to those of Utah and the United States, using data from the 2000 U.S. Census. Box Elder County's population in 2000 was 42,745. As a whole, it is considered rural. However, Brigham City, which had a population of 17,411 in 2000, is considered an urban cluster. An urban cluster has a population of at least 2,500 in comparison to urbanized areas that have at least 50,000 or more. Rural areas are any areas that are not considered urban (U.S. Bureau of the Census, 2000). Utah, in general, has very little racial and ethnic diversity and Box Elder County follows this pattern. In fact, it has even fewer minorities, with 92.9% of the population white, compared to 89.2% in the state of Utah and 75.1% in the United States.

Even though Box Elder County and Utah have a small minority population, there has been a significant increase in the Latino population in Utah. As Smith (2006) noted, "Utah's Hispanic population grew by 138 percent between 1990 and 2000. Among all 50 states, Utah ranks 20th in terms of foreign-born population gains during that time period" (p. 27). Therefore, although the population of Hispanic people makes up only 7.2% of Box Elder County's population and nine percent of the state of Utah's population, this population is rapidly growing. Another unique feature of this case is that the majority of county residents are members of The Church of Jesus Christ of Latter-day Saints (LDS). Box Elder County had 34,371 members of the LDS church, which is 80% of the

Table 1
Demographics of Box Elder County, Utah, and the United States, 2000

Demographic Variables	Box Elder	Utah	United States
Population	42,745	2,233,169	281,421,906
Income			
Median Household Income	48,223	45,756	41,994
Percent of Individuals below poverty line	8.6	9.4	12.4
Race			
American Indian/Alaskan	1.0	1.3	0.9
Asian	1.1	1.7	3.6
Black	0.3	0.8	12.3
Native Hawaiian, Pacific Islander	0.0	0.7	0.1
Hispanic or Latino	7.2	9.0	12.5
White, not of Hispanic Origin	92.9	89.2	75.1
Persons Reporting Two Races	0.8	2.1	2.4
Housing Characteristics			
Persons per square mile	7.5	27.2	2.4

Source: 2000 U.S Census

county's population. By comparison, 65% of Utahans are members of the LDS church (Canham, 2005). Given the rural nature of this district, the relatively low numbers of minority students, and the unique religious make-up of the community, I am not able to generalize to all U.S. school districts or even urban districts in the state of Utah. But, again, because the study is exploratory, the lack of generalizability is not a major limitation.

In 2006-2007, the Box Elder School District reported a student population that reflected county demographics: 89.3% white, 8.1% Hispanic, 1% Asian, 0.7% African American, 0.7% American Indian, and 0.2% Pacific Islander (Table 2). The

Table 2
7th – 9th Grade Students by Race and Ethnicity, 2006-2007

Race-Ethnicity Percentages	7th grade	8th grade	9th grade
American Indian/Alaskan	0.8	0.5	0.4
Asian	1.1	0.5	0.7
Black	1.3	0.6	0.3
Native Hawaiian, Pacific Islander	0.4	0.0	0.4
Hispanic or Latino	8.2	8.7	8.5
White, not of Hispanic Origin	88.2	89.8	89.7

Source: Box Elder School District Enrollment Data

percentage of students of color in the school district is slightly larger than the percentage of people of color in the county in 2000. This is likely due to an increase in the Hispanic population over the past few years and the younger-than-average nature of Utah's Hispanic population. Table 2 provides a racial-ethnic break down of the student population in the 7th through 9th grades, which is the focus of this study. At the intermediate and middle schools, the free-and-reduced-lunch percentages are 37.5% and 31.5%, respectively.

Data Collection

Before exploring the decision-making processes behind placements into different mathematics tracks, I wanted to establish that the school district does, indeed, have a tracking program and that mathematics "tracks" are stratified by race and ethnicity. I used data from the Utah State Office of Education and Box Elder School District to gather data on the race and ethnicity for each math course from 7th grade to 9th grade.

This data is public information; however, I obtained lists from the district personnel directly. Results from this analysis are provided in the chapter that follows.

Once I had established that a tracking system existed at the district level and that it was stratified by race and ethnicity, I explored the official tracking policy for the district. For this aspect of the study, I conducted an informational interview with the district assistant superintendent, who supervises curriculum instruction, as well as the district math specialist. These interviews focused on the official protocol for placing students into different mathematics courses.

The third and most important element of my data collection involved semi-structured interviews with teachers and counselors in the two middle schools and two intermediate schools in Box Elder School District. I focused on teachers and counselors because, as Cooper et al. (2005) suggested, both are critical decision-makers in the tracking process: "Teachers and counselors-from any ethnic background-can act as cultural and institutional brokers when they help students succeed in school and achieve their dreams. Teachers and counselors can also act as institutional gatekeepers when they assess students against standardized benchmarks that determine eligibility for vocational and remedial classes and college-prep programs; discourage them from taking classes for university admission; or enroll them in vocational tracks solely on the basis of their ethnicity, race, or social class" (p. 421).

The purpose of these interviews was to explore and understand how mathematics tracking in these schools happened in practice. Interview questions focused on the criteria that teachers and counselors use in placing students into particular tracks and their thoughts on the tracking system. (See Appendix A for a list of interview questions.) As

well, I inquired as to the ease with which students are able to move between tracks. This is particularly important since at least one study found that schools that provided less freedom to move between tracks had more inequality between the tracks and lower overall scores in mathematics (Gamoran, 1992). Finally, I asked about what types of communication are sent home to inform parents about the consequences of math placements. In much of the literature, educating parents on the importance of the educational choices available to their children has been paramount. In one study, for example, only a few parents in the community were aware of the academic requirements for entrance into college and career opportunities (Hudley, 1997).

The interview protocol was submitted to the Institutional Review Board (IRB) at Utah State University to obtain human subjects approval. This approval was granted on June 18, 2006, and I began data collection when school resumed in August. Before beginning these interviews, I also received permission to interview from the superintendent of the district, as well as from the principals of each intermediate and middle school in the district. To be eligible to participate in the interviews, potential participants had to be employed by Box Elder School District. As well, teachers had to be teaching in the math content area. I used my school e-mail to contact all math teachers and the counselors in the two intermediate schools and the two middle schools in the district. (See Appendix B for a copy of this email.)

As Table 3 indicates, out of 11 math teachers at intermediate school A, 7 teachers agreed to participate. At intermediate school B, nine teachers were contacted, and three agreed to participate. At middle school A, six teachers were contacted and three

Table 3
Teachers Contacted for Participation

School	Contacted	Agreed to Participate	Interviewed
Intermediate School A	11	7	3
Intermediate School B	9	3	3
Middle School A	6	3	3
Middle School B	7	7	3
Total:	33	20	12

responded to the e-mail. At middle school B, every teacher who was contacted agreed to participate. Overall, I contacted 33 teachers and 20 teachers responded and agreed to participate. Out of those 20 teachers, 12 were interviewed. Intermediate school B and Middle school A had three teachers who agreed to participate. I wanted equal representation from each school; therefore, I chose to interview three teachers from each school. Both intermediate schools and both middle schools were represented, with at least three teachers interviewed from each school. I was able to interview all full-time math teachers at both of the middle schools and both 6^{th} and 7^{th} grade teachers at the intermediate schools. I contacted seven counselors and five responded and agreed to participate. At least one counselor from each school responded and at one middle school both counselors responded and agreed to participate. Again, equal representation was desired, so one counselor from each school was interviewed.

Once teachers and counselors agreed to participate, I set up appointments to interview them. All interviews were conducted in the schools where the teachers and counselors were employed. The interviews lasted approximately 30 minutes and were recorded. At the commencement of each interview, I received informed consent from

each participant. I reassured them that their participation was voluntary and the information provided would be confidential. At the end of the interview, I transcribed the interview, which I combined with field notes.

Out of the 12 teachers I interviewed, four were men and eight were women, all of whom were white. The four counselors I interviewed were all women, three of whom were white and one of whom was Asian American. The years of experience for the teachers ranged from 1 to 35 years and for the counselors 13 to 37 years. I also was able to interview both regular education teachers, as well as teachers who team-teach classes with special education teachers.

CHAPTER 4

FINDINGS

In this section, I present my research findings on the process of tracking in Box Elder School District. First, I provide evidence of math tracking in intermediate and middle schools in this district, as well as racial-ethnic disparities in such tracking. Second, I outline the official policy on tracking that exists in the district. Finally, I examine the tracking beliefs, tracking practices, and explanations of racial-ethnic disparities in tracking among the educators and counselors interviewed.

Math Placement by Race and Ethnicity

In Box Elder School District, there are distinct math "tracks" in 7th, 8th, and 9th grades. In 7th grade, the lower track is math 7 and the higher track is pre-algebra.[1] The tracks for 8th grade are pre-algebra or algebra. The pre-algebra course is for students who did not perform well in pre-algebra or those who were in math 7 when they were in 7th grade. The upper track for 8th grade students is algebra one. There are four tracks when students reach 9th grade. Pre-algebra is considered to be the lowest track. In Utah, students in 9th grade who take pre-algebra do not receive high school math credit for this course. The next course is applied math. This course takes the same core test as algebra, but it is considered a lower track than algebra. The next track for 9th grade is algebra, and the upper track is geometry.

[1]For the 2007-2008 school year, math 7 is being replaced by pre-algebra 7. The pre-algebra 7 course is a two-year course of pre-algebra. Students in this track are exempt from taking the state core test at the end of the first year. They continue with the pre-algebra core curriculum during the second year and take the state core test at the conclusion of their second year.

Evidence suggests that these tracks are stratified, to some extent, by race and ethnicity. Tables 4, 5, and 6 report the distribution of racial-ethnic minorities in 7th, 8th, and 9th grade mathematics courses. As table 4 indicates, all students are more or equally likely to be in pre-algebra in comparison to math 7. Even so, and in comparison to Asians, Blacks, and whites, a greater proportion of American Indian/Alaskan, Native Hawaiian/Pacific Islander, and Hispanics are in Math 7 (33%, 50%, and 30%, respectively).[2] In 8th grade, all students, except white students, are more likely to be in the lower tracks for mathematics. (See Table 5). In the four 9th grade tracks, all students, except Asian students, are more likely to be in the upper two tracks. (See Table 6). But a sizable portion of Hispanic students (36%) are in the lower two tracks. Of the upper two tracks, all students of color are more likely to be on the lower of the two. The exception here is white students, who are more likely to be on the highest track of geometry than any other track.

Table 4
Demographics for 7th Grade Math Courses, 2006-2007

Race-Ethnicity Percentages	Lower Track (Math 7)	Upper Track (Pre-algebra)	Total	
American Indian/Alaskan	33.3	66.7	100	(n = 6)
Asian	11.1	88.9	100	(n = 9)
Black	18.2	81.8	100	(n =11)
Native Hawaiian, Pacific Islander	50.0	50.0	100	(n = 4)
Hispanic or Latino	30.3	69.7	100	(n =66)
White, not of Hispanic Origin	17.5	82.5	100	(n =715)

Source: Box Elder School District Enrollment Data

[2] The numbers for American Indian/Alaskan, Asian, Black, and Native Hawaiian/Pacific Islander students may be to small to make valid comparisons.

Table 5
Demographics for 8th Grade Math Courses, 2006-2007

Race-Ethnicity Percentages	Lower Track (Pre-algebra)	Upper Track (Algebra)	Total	
American Indian/Alaskan	100.0	0.0	100	(n = 3)
Asian	75.0	25.0	100	(n = 4)
Black	75.0	25.0	100	(n = 4)
Native Hawaiian, Pacific Islander	0.0	0.0	0	(n = 0)
Hispanic or Latino	67.3	32.7	100	(n =49)
White, not of Hispanic Origin	44.2	55.8	100	(n =721)

Source: Box Elder School District Enrollment Data

Table 6
Demographics for 9th Grade Math Courses, 2006-2007

Race-Ethn.Percents	Lowest (Pre-Al.)	Lower (Applied)	Higher (Algebra)	Highest (Geometry)	Total
Amer. Ind/Alaskan	0.0	0.0	66.7	33.3	100 (n = 3)
Asian	0.0	80.0	20.0	0.0	100 (n = 5)
Black	0.0	0.0	100.0	0.0	100 (n =1)
Nat. Haw./Pac.Isl.	0.0	0.0	66.7	33.3	100 (n = 3)
Hispanic or Latino	21.3	14.8	45.9	18.0	100 (n =61)
White, non-Hisp.	6.8	10.0	37.7	45.5	100 (n=637)

Source: Box Elder School District Enrollment Data

Official Math Placement Policies

In Box Elder School District, there is no official policy regarding tracking. According to the district curriculum specialist, the mathematics placement procedures are

left up to the individual schools.[3] Because there is not a set standard for the district, I questioned each educator that I interviewed about what their school's math placement procedures were. As I suggest below, there was a wide variety of policy procedures at each school in the district. As well, different educators interpreted these procedures differently within the same school.

Intermediate School A

When asked what the policy was for tracking students in math, a teacher at intermediate school A said:

> Around April, they gave a math placement test to all of the 6th graders, from basic 6th grade core, usually one question for each item. And then they scored it and they didn't put them in by percentile, but took the lowest ones and gave them to the pre-algebra 7. So they took the 90 lowest students, or I think it was 80 and divided them up, but also allowed parents to disagree or change their child's placement.

In contrast, a counselor from the same school explained:

> It is our [school] policy to just place every student in pre-algebra unless their 6th grade math teacher says they don't have the skills to go to that class and then they are put in math 7 so that is determined by their 6th grade math teacher.

The other teachers from this school were fairly consistent with the first teacher, emphasizing the role of placement tests. The placement test to which these educators were referring was created by the 6th grade teachers at the school. These tests are graded by the individual teachers, and then the teachers gave the scores with any comments to the vice principal. This test was created for the 2006-2007 school year and was designed to be used each year thereafter with some modifications under teacher direction.

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[3] During the 2007-8 school year, however, there will be representatives from all levels of education participating with Cache School District to create assessment tests that may be used to help educators evaluate student progress.

Other teachers mentioned other criteria, as well. One teacher said that placements were determined by grades, the placement test, and student attendance. According to another teacher, the vice principal along with the counseling office determined who was placed in the lower classes. According to a few of the teachers, there were restrictions based on "crunching numbers," which will be discussed later. In summation, for this school, there were varying degrees of understanding of the "official" policy for tracking. As well, there were differing opinions on the role that individual teachers and placement tests played in the placement process.

Intermediate School B

At the other intermediate school, I found similar policy procedures to those at Intermediate School A. One teacher commented:

> The 6th grade teachers teach the 6th grade core. They have identified 10 objectives that they remediate with students. We use the remediation results as well as the core results and core test results to place the students. We also have a test in the 6th grade that is done two-thirds through the year that lets us know how well they think they are going to do on the core test, when they begin to sign up for classes.

After further questioning, this teacher said that the test and teacher input are used to place the students for the upcoming year, but with changes after core test results are in.

Another teacher initially thought that all students were assigned into pre-algebra as 7th graders. After additional questioning, he recalled the following:

> We did give a placement test. All four 6th grade teachers got together. That is why I don't remember [the placement] because we did it as a group. We all just got together after we graded our tests. We brought names of kids we thought would qualify and then we all talked about them and there was only a certain number of kids that could go into that.

The other two interviews at this school reflected this same policy of giving a placement test to determine where these students were placed. The difference between this school and Intermediate School A was that the ultimate decision was left up to the math core teachers at this school and the counselors and administrators at Intermediate School A.

Middle School A

Whereas the intermediate schools were relatively similar in their placement procedures, the middle schools varied greatly in this regard. Middle School A had the policy that every math teacher must state the requirements for the placement procedures in a written disclosure to the students. That is, the students were made aware of the requirements for the course and what the expectations were. This disclosure was given to students and sent home to have parents read and sign, indicating that they agreed to the terms in the disclosure. The placement procedure, as described by one teacher, is as follows:

> We base [placement decisions] off of the previous year's grades as well as the core test. We base it off if they do not pass the core test or if they are in pre-algebra if they get a D- or above average then they can move on to algebra. In algebra, as a 9th grader, it is a C- to go to Geometry and as an 8th grader is a C+ average to move on to Geometry. It is based off of second and third trimester's grades as well as their core test that we receive at the end of the year.

Another teacher emphasized test scores over grades in this process:

> We do a trimester test first and second trimester because we also grade the core test. We look at the raw scores on that too. People in my department made the test up. The high school asks that we go by testing and not homework because kids cheat. We all know that. It is a total teacher decision. We sign them into the next class.

She goes on to say that the teacher ultimately makes the decision during the second trimester because that is when registration occurs.

When asked about the trimester placement tests, one educator explained that the tests are written by the department. They cover what the teachers believe to be the most pertinent information of the trimester. The teachers felt that the tests were done pretty fairly. As one math teacher explained:

> It is more of a back up if a kid is borderline. You know if they are just lazy and not turning in their homework it gives you an idea that they know the material and we move them on. They haven't turned in their homework, but have done well on the test… You don't want a kid to be bored and hold them back.

Overall, educators at this middle school were fairly consistent in terms of what criteria they used in math tracking procedures, but they were not consistent in the weight they placed on these different criteria.

Middle School B

The other middle school did not have any kind of trimester test. Their policy was to send students to the next course if they had a C average or higher by the time registration occurred during the second trimester. Some educators and counselors described this method as limiting because the first trimester's curriculum is, in large part, a review from the previous course. It is during the second trimester that students begin to learn information that is new to them. As one teacher commented:

> Basically, once we get students they are already in a certain track. Once they pass one level, then they go on to the next level. Passing means they have a certain degree of proficiency. Like for pre-algebra, if they have a C or higher they go to algebra. If they are an 8th grade algebra student and get a C+ we ask them to have that certain level of proficiency to go on to geometry. There are some students that repeat.

Another teacher remarked:

> When I register, I look at success grade-wise and my judgment as an educator after 37 years of watching students. You know you have a student that might not

> qualify to be in geometry grade-wise, but might be a really hard worker and a good student and qualify in the fact that their skills as far as how they work.

Both of these teachers are expressing that there are criteria for placement, but that a teacher has some discretion as to how those criteria are used. Overall, this school bases the placement on the first and part of the second trimester's grades.

The teachers in three out of the four schools in the study felt that student grades were less of an indicator of student math potential. Specifically, many teachers felt that grades did not necessarily reflect a student's knowledge of the math content. They discussed how cheating on homework could inflate student grades. Also, grading scales were different for each teacher. Therefore, having a department test or a district test was considered more valuable in determining student placement.

Tracking in Practice

In addition to these official tracking policies were a number of unofficial tracking practices that were enacted by teachers and counselors. That is, placement procedures were sufficiently flexible to allow for a great deal of room to maneuver in making placement decisions. And this created a kind of parallel tracking system that at times complemented and at other times contradicted the official tracking procedures. I argue that it is here, in these "unofficial" tracking practices, that many of the racial-ethnic disparities in math tracking are rooted. In the following section, I outline the tracking beliefs held by the teachers, as well as the tracking procedures and modifications that are initiated by teachers, students, and parents.

Tracking Beliefs

In terms of tracking beliefs, I asked the respondents if they knew what the term detracking meant, as well as how well students would perform if a school was detracked. Many respondents were not familiar with the term detracking. After further explanation, an overwhelming majority of respondents believed a detracked mathematics classes would not work for all, or even the majority of the students. They felt that because students learn at different rates, a detracked mathematics class would be detrimental to individual student learning especially those on the top and middle of the ability scale. Thus, the majority of the teachers concurred with tracking proponents. They believe that math is naturally tracked and that some students are not ready to move as quickly as others and that there is "such a broad spectrum of abilities", according to one teacher, in the student body at any school. One teacher, for example, made the following remark:

> I personally don't think [detracking] would work well. You have different levels of kids. I shouldn't say they couldn't learn the pre-algebra, just some learn it slower than others. If you kept them at the same pace as the average student, the lower student would fall behind.

The teachers felt, then, that all students can learn, but that some students learn slower and some learn faster than others.

Most of the teachers believed that even if you detracked a class, you would still be grouping by ability. As one teacher explained:

> I mean you still have to deal with the problems. You still have to deal with the difference in ability. Let's not call it a problem. In elementary school, I had to give 3 math groups. You can call them what you want, blue bird, red birds, I don't care. You got the kids that can't handle the whole load. You got the kids who do it all and do it well. Then you got the kids who do the full load and want more. I had some kids, just to give you an example, who did the entire math book cover to cover. The average did the entire math book under my direction. And then I had others that, I don't know that you could say they did half of it. It was

> ability and talent. I didn't want to overwhelm or underwhelm them. That is the only reason I can think of for tracking.

This teacher believed that tracking would help the students who are at different levels, as well as help the teacher. Also, many educators thought that by detracking, educators would do a disservice by not providing the upper level math tracks. One teacher thought that there would not be much growth in the students because there would not be anything to challenge the gifted students.

Although most teachers supported tracking, many teachers pinpointed certain advantages of detracking. As many explained, when students are tracked, the lower track students lose role models and discipline becomes a bigger problem. The one teacher who felt that the classes detracked in 7th grade would be more beneficial than tracked classes said the following:

> If it were up to me, I wouldn't track in the 7th grade. But I realize that with the laws that are out there, if our school is going to meet the standards that are set up, that is probably not a good choice. I have found that the problems that came with tracking students were far worse than challenging them with a little harder math. Just because they often became behavior problems where there was no one to look up to model or pattern their learning after and for me as a teacher that was harder than having them all together and me giving that a little extra time to that student. So that's just me. I am glad to support this program, but if I got my first choice, I would not track students in 7th grade. So that will probably be different from a lot of people.

Teachers found that if a student is in the upper track in math, often times they are in the upper tracks in other areas, which leaves the students in the lower tracks without "role models to look up to." They felt that the opportunity for the "high ability" students to be leaders is diminished when students are tracked. One teacher observed:

> [Y]ou don't have the high kids helping the low kids and you don't have that interaction and the opportunity for leadership for the high kids. And when you

> teach someone you learn it better, so you don't have an example to look up to so as you create that track in the beginning it just gets wider, I think.

Thus, a majority of teachers identified having students of all abilities in the same classroom as a benefit to the lower ability students, as well as higher ability students.

A few teachers pointed out that there was a time when one of the intermediate schools in the district was detracked. Specifically, every student in the school was placed in math 7, or the lower track. This, however, ran contrary to what detracking proponents argued, which was that all students should be on the higher track. Later, the school remained detracked, but with pre-algebra as the course taught in the 7th grade. When asked how the earlier detracking project went, one teacher said that the students were getting a "dummied down" version of the curriculum. When the process changed to every student having pre-algebra as a 7th grader, there were still major problems. As one counselor explained:

> [A] lot of kids fell through the cracks. Some of them just did not grasp the concepts. They didn't have their basic skills of addition, multiplication, and those things. So when they were thrown in pre-algebra, I mean it was overwhelming to a lot of them. They didn't do well [at the intermediate school] and when they came over here, they had to be in pre-algebra again. They needed more basic math 7 to get their basics skills up to where they would understand a little bit of the algebra. The past two years they have done the math 7 over there and I think it has helped a lot.

This counselor saw the detracked math program as overwhelming to the lower students. She also found the transition from a detracked school to a tracked school showed an improvement in the students' mathematical abilities. Another counselor summed up her feelings of detracking, which was in many ways expressed by the other educators, with the following: "That would be math road kill." With the exception of one teacher, all of the teachers and counselors believed that the current system of tracking was working in

this district. They felt that tracking was in the best interest of the majority of students. As well, they considered it to be an unbiased process.

Tracking Practices: Teacher Input

In terms of tracking procedures, I asked teachers to describe what kind of input they had in determining placement. The teachers responded by emphasizing their role in developing placement tests and using their discretion in modifying placements.

Placement tests. The placement tests were created to help teachers determine how successful the students would be in the sequential track. They felt like they had to come up with something besides relying solely on core tests and teacher input. They believed that the state core tests "don't tell you a whole lot". Although there was some consensus that these standardized tests led to more objective requirements for math placement, the core test was considered too little too late when it came to registering students for the following year. Even so, teachers wanted their placement procedure to be standards-based. And many of the teachers felt like the tests they had created were objective, leaving out personal feelings or beliefs. As one teacher mentioned: "I am glad to have the objectives and the test. Because I think that sometimes I think that I am biased just because of the personality. And that when they can actually pass different levels and say 'that is right'. And sometimes I can see myself saying they are such a smart kid when really they are missing some major concepts. So that helps me see where they are missing concepts too."

One teacher at Intermediate School B felt similarly because it gave her students a chance to grade themselves. As she explained:

> We use forms that the students know themselves, they really are objective. Then [the students] know what they know and what they don't know. Here is an example of a student who should be in the two year program. He went through after we took the district test and said "I can demonstrate the skill here" and that helps me remediate. With every assessment that we give, [the students] have a chart on themselves. Then we remediate or not.

At Middle School A, where trimester tests are given, the tests are created by a teacher at the school and are approved by the math department as a whole. These teachers felt there were improvements that could be made, but overall the system that they had in place, worked well for all students. They felt that the core test could be a good indicator of student ability if it were earlier in the school year, or if registration were later. In general, the teachers felt like the placement tests could be improved, but that the system they had was working better than when the decisions were made solely on teacher discretion.

*Teacher discretion***.** Teacher discretion played a big role in cases where students were borderline or in cases where students had a disparity between the score on the test and the student's grades. For the students who struggled and did poorly on the trimester tests or the 7th grade placement test, there was room for the teacher to request that they be placed in a higher math track. One teacher at a middle school acknowledged that, "There are always a few kids that are really hard workers that struggle on tests that score a little lower. We usually move them on." Another teacher commented as follows:

> They had us give them a placement test, and that should be our guide. But after that it was still teacher discretion, so if you feel like for some reason it should be different, you can still say where you think they should go.

A counselor at the school felt that if a teacher does use his or her discretion to move a student up a math track, "it motivates the student to work and try harder."

One teacher felt like some teachers thought their students' ability was not reflected in the scores and therefore placed them higher. On the other side, there were teachers who felt that the students scored too high and should be placed in the lower track. As one teacher mentioned:

> [Another teacher] had certain kids that she thought needed [the two year class], but they had higher scores than kids I had. I said we should go with mine and she said no. It was just a four person discussion and some of hers that were a little higher on the test got the class.

One teacher said, "I think sometimes children are misplaced because of the particular teacher they have. The first thing I ask is 'Who was your teacher?' and then I know why. I can pick them out in the first couple of weeks." This teacher looks for students at the first of the trimester that she believes should be in the higher track. At that point she can recommend that the students be moved and they are. But if it were not for her vigilant efforts, those students would be placed in the lower track. Many teachers at the other intermediate school felt the same way in that teachers have a great say in the placement, even though the test scores are supposed to be the determining factor in placement.

Tracking Practices: Parent Participation

In addition to exploring teachers' perceived role in influencing tracking decisions, I asked those interviewed how parents participated (or did not participate) in making placement decisions. They emphasized teacher-parent communication and parental input in changing math placements.

Teacher-parent communication. Before students register for classes, there is communication about placement procedures to parents in only one school. As was mentioned before, Middle School A states the requirements on their disclosures at the

beginning of the year. This disclosure needs to be signed by the parents after they have read the requirements for the class and the procedures for math placement for the following year. For the other middle school, the only communication with the parents about their child's math placement was when the registration was sent home and parents were required to sign it. Usually this was the last step after the math teacher had initialed where they felt the student should be placed.

Because initial communication with the parent was typically limited, few parents were aware of the tracking procedures or consequences. As one counselor explained:

> I think parents have no idea. The parents are really concerned that their kids take the 1050 and 1060 [college math] class in high school. That is their big thing. We don't say you are in the lower track and you are in the higher track. We tell them that applied math is the same thing as algebra. They will be going on to applied math 2 which is the same thing as geometry, although the high school would like everyone to take geometry.

Neither did students typically understand what the tracking procedures and consequences were. According to one teacher:

> We didn't really tell [the students] where they were placed. I think [the principal] told them where they were placed. I am not really sure that the students even understand where they are going with the class. I remember when I gave them the test, I said this determines where you go next year and they were concerned about it, but I never shared the results with them.

Indeed, it appears that it is largely up to the individual teachers whether to disclose the procedures behind tracking. At the other intermediate school, where the district test was also given, one teacher described how she explained her tracking decisions to her students and parents:

> I sometimes let parents know that we are going to be placing their student and the test is coming up. Like at parent-teacher conferences when they come, but I noticed that I don't do it with all my parents and I need to because maybe they want their kids ready for that test. Some of the borderline [students] that I know

> will be borderline, I actually ask those parents. I say I know they are really close and when we take this test they will be close. Here is what will happen if they get put into the one year and here is what will happen if they are in the two year. This is how it will look for the future. Keep your mind open and if you have a preference give me a call, but nobody did. Some of them said, even before the test, I really want my student to be in the lower one. And they were the ones, mostly [special education students], and they did test lower and their parents know right where they were at.

This was the only example where the teacher told parents directly that their students would be taking a math placement test. However, she did not tell all the parents of her students.

Parental input. When respondents were asked about the math placement for students, one issue that came up for almost every respondent was parental involvement in placement changes. From the counselors' perspective, if a parent calls and requests that their child be placed differently, the counselor will investigate further. As one counselor commented:

> Well, occasionally when a parent finds out that their student isn't going to be placed in pre-algebra, they will be upset. They will call and they will want to make sure that their student is in the pre-algebra class and at that point we will investigate that a little bit further. We will ask the 6th grade math teacher why they made that recommendation, but generally they will remain there. The teacher is able to explain to the parent why they need to stay in that placement and it has worked well.

If the parent is still not satisfied with the result, the counselor does what the parent wishes. It does not happen very often, according to one counselor, but a handful of students each year will change classes. This counselor also mentioned that there have been less transfers after the new policies have been enacted by the schools and more communication between the intermediate schools and the middle schools.

Many of the teachers felt that students are often pushed by their parents into math courses that they are just not prepared for. They push their child because an older sibling was on a certain track and they want all of their children on that track, usually the higher track. One counselor believed that parents push their kids "to do better than [the parents] did when they were in school. I don't want to be, put people into categories, but you can kind of tell when you talk to the parents how educated they are and you can get an idea from there." There were many different ways that teachers used to describe the characteristics of these parents who contest their child's placement. Some terms that were used to describe these parents were "professional," "highly motivated," "white," "prestigious," "educated," "pushy," and often times "educators". One teacher said, "You have basically, most of them are well-off white kids. They are usually well-off. Their kids are on the college plan. I mean the doctor's kids, where are they going to be? In [the upper track]."

Two teachers had the opposite situation. They found that some parents want to hold their child back, even though the teachers had recommended the students move on to the next level of math. They don't want their children to struggle at all. As one teacher commented:

> There are some parents who want their students to have an easy life. I had one parent last year and his daughter was very competent in algebra, but he wanted his daughter to take applied math in her sophomore year. I think that is a negative effect.

One teacher felt that there was no way to describe parents who contested tracking decisions for "high ability" students. He felt these parents came from all socioeconomic backgrounds, education levels, and all ethnic backgrounds.

There was overall consensus that there was less parental involvement for the students on the lower tracks, as well as for students of color. Some educators felt that the parents had given up or lacked knowledge of math. According to one teacher, the parental involvement is lacking because of the school grading system. At the intermediate schools, students can receive grades of A to C-; below a C- is I for incomplete. The teacher stated:

> Part of the problem we have at our school is that students cannot fail. We have no failing grades. The lowest grade we can give is a C- and we have to allow them to make up all of their missing work. So I think our parents get really lazy, is what I think happens.

Another teacher felt that the parents in the higher tracks are "much more involved, but not so much in what they are doing as in their grade." She meant that the parents cared more about their grade than about what content they are learning in the classroom. One teacher provided an additional reason for limited parental involvement:

> A lot of parents we have now are kids raising kids. And they may not have the parental skills that they need. Or they were raised that way. They didn't have support; they don't know how to do it. Some care, I think the majority care; they just don't know how to proceed.

In general, the teachers interviewed believed that the more parental involvement, the more student success. As one teacher said:

> You tend to have parents who are involved in the education of their student, their students do so much better and you can see it. It is very visible and a lot of parents just don't see it, but that is their job. Especially they try to have their kids be more responsible for themselves which is good, but they still need to keep on top of it. And the parents, their form of involvement is if their kids are not doing their homework to get after them is about the only parental involvement we have.

One teacher summed up parental involvement by saying, "Here is the one thing that I want you to understand. The parent has the ultimate control, no one else." Parents were

understood here to be the best advocates for their children and if they did not agree with a placement, they had the ability to alter their child's math placement.

Tracking Practices: Student Involvement

When asked about the role of students in making placement decisions, the educators I interviewed emphasized the importance of teacher-student communication, student improvements and ability, and student input.

Teacher-student communication. Some teachers gave detailed instructions to their students about the impact placement tests would have on the students' futures. One teacher told her students:

> This [test] will decide where you are going to be placed in math. You are starting to choose what you are going to do with your life at that point and you need to get on a track that goes with that. You want to do as much as you can so that you can choose the path you want later on because if you don't, then you can get another [math course] in college, but it sure is easier if they are higher up.

This teacher was one of the only ones who mentioned that they really emphasized the meaning of the 6th grade test to her students. She tried to tell her students what it means for their futures, explaining: "You want to do as much as you can so that you can choose the path you want later on. If you don't, then you don't get a choice, it is made for you."

Another teacher did not recognize the importance of the test until I interviewed him. Therefore, he did not place the emphasis on the test that other teachers in the district may or may not have. As a result, the outcome of the tests could be viewed differently by students, depending on what 6th grade math teacher a student had and the emphasis that particular teacher placed on the test.

Student improvements and ability. Student improvements after registration and student work ethic were justifications for altering a student's math placement. In Box

Elder School District, registration begins in February. Therefore, half-way through the school year, students are expected to register for the upcoming school year. Because it is early in the year, teachers explained that it is hard for the teachers to get an accurate gauge of every student's ability in mathematics. For this reason, exceptions have been created for students who improve from February to May. If a student in February is not ready to move along the same track, they are placed in their current math course again. However, if by the end of the school year that student has shown sufficient improvement, he or she can go to the counselors or teachers and have their track placement changed. A counselor at the middle school explained this as follows:

> A lot of times, at the time when we do registration, it is before the end of the trimester and the end of the year. Some of the kids have really kicked into gear and then they will do better at the end.

If a student shows such improvement, the counselor will change their placement. In this case, educators are more apt to place students according to their demonstrated skills, rather than their work ethic. As one respondent explained, "There was a test and then teachers had mentioned that what if they didn't get their work done, but are brilliant. I think we decided to put them where their knowledge was not where their work ethic is."

Student input. Another practice is to consider student input when making or altering placement decisions, although this practice is rare. Several teachers discussed peer influence on the placement of students. The teacher would recommend that a student be placed on a certain track because of the ability shown, but the student would either try to move up or down according to where their friends were placed. There were several instances of this mentioned throughout the interviews. One respondent said, "I think they want to be with their friends. I mean that is 90% of it." When the teachers

believed the change in tracks was due to a peer influence or involvement, they did not change the students. However, if the student proceeded to involve parents in the decision, the change was more likely to be made.

Explanations for Racial-Ethnic Disparities in Tracking

At the conclusion of the interviews, respondents were asked what reasons they believed explained the racial and ethnic disparities in the math tracks. Most educators pointed to cultural differences, language barriers, and the migrant status of students as the reasons why students of color are disproportionately in the lower math tracks.

Cultural Differences

Teachers and counselors believed that there may be a cultural difference between white families and the families of students of color. Some educators felt that the parents of color often times did not challenge the teachers and the school system. One teacher stated, "I think that a lot of Hispanic parents are a little bit more nervous to be helping you out because they don't quite know their place in school." Many teachers and counselors expressed similar viewpoints. One counselor stated:

> I think that [the parents of color] really don't know or they don't have the knowledge of the system. So, I mean if I was thrown into a country and had a child going to school and they said this is where they should be, I would leave it up to them to know where the child should be.

Other teachers felt the same way. They believe that minority families do not question the decisions of the educators at the school because they are more respectful of the educational authorities and they do not want to cause trouble for the teachers or their children.

The Language Barrier

The language barrier that some students have was another reason teachers felt like students of color are more often times placed in a lower track. It is not that they do not know the information or cannot learn it, but that student-teacher communication and testing ability are compromised when the student's mother tongue is not the language of instruction. Indeed, teachers discussed how their lack of fluency in the students' native language is a detriment to their teaching. They cannot give the students the full educational experience when they cannot effectively communicate the information with them.

Students who are classified as English Language Learners (ELL) were often placed in the lower classes because of their ELL classification. One teacher mentioned that he had a student who was placed in the lower track based solely on the fact that he was ELL, but that he was "brilliant." Another teacher said:

> I think a lot of times with ELL, it's not so much that they don't know it but that they didn't do good. I can't tell you the number of teachers that come and want to put the ELL in the team taught [special education] class. I'm like it is not because they are stupid, they just don't know English. And we have a policy that we do not stick ELL in there unless they actually have a learning disability.

The teachers felt that the ELL students do not test well, and therefore will score lower on the trimester and core tests because of the background knowledge needed for these tests. Since these tests are used to determine math placement, many of these students are placed in the lower track because of their language skills.

Migrant Status

Many of the teachers and counselors interviewed believed that students fell behind in math because of their absences from school. They discussed parents pulling their students out of school in December for a month or more. These parents take their students out of school to return to their native country to visit family for the holidays. When they return they have missed important math instruction. The dilemma is that math is sequential and, as a result, students who transfer from one school to another or who miss a number of days have gaps in their math knowledge. One teacher even bases her math placement partly on attendance. If other teachers were using similar methods, this would lead these migrant students to be held back simply because of the number of days they miss math class.

For students who move from school to school, the gaps in their learning could also be caused by the order in which different schools teach the same content. For example, a school in a different state could cover different concepts than the ones covered in Utah. Even schools within the same district could be covering different concepts at the same time of year. Box Elder School District is not unified on when they teach the core curriculum. Also, every state has a different core curriculum for their teachers to follow. As one teacher explained:

> I think [migrant students] would be struggling from school to school. What we teach the first trimester of algebra might be different from what we teach first trimester in another. We try to keep our school aligned, but even at [a different school in the district] what you teach the first trimester might be different than what we teach. There are gaps in what they've learned.

Not only does each state have a different curriculum, from country to country there could be a greater discrepancy.

CHAPTER 5

DISCUSSIONS AND CONCLUSIONS

The purpose of this study was to investigate how students are tracked in math in one school district in Utah. Because this is a rural school district in Utah, I began this study with the acknowledgement that tracking may occur differently here than in other districts around the country. At the same time, I argued that I might have better insight into the policies and procedures within this particular district because I am employed as a teacher here. Having this position allowed me to make connections, talk more freely with educators, and gain a better understanding of not only the official policies, but the unofficial practices of teachers and counselors as they made tracking placements. This study is of sociological significance because it shows that there are subtle social factors that influence tracking decisions, which may result in marked racial-ethnic disparities in math placements and achievement. In the following sections, I outline ways that official placement policies, teacher input, parent participation, and student involvement might be relevant to racial-ethnic disparities in mathematics tracking.

Official Placement Policies

There were different policies at each school that were used to place a student into a math track. The assessment tests used at both the intermediate and the middle school levels may have led to racial disparities because of the way the tests were written. Students of color may have been at a disadvantage based on the background knowledge inferred from the tests. Also, the language of the tests could disadvantage ELL students.

School tracking policies that stressed grades were also problematic. Migrant students, for example, might receive lower grades, and therefore be assigned to lower tracks, simply because of their absences from school. Also, registration usually falls in February and some migrant students miss days in December and January, which could lead to students being relegated to a lower track because of their grades at that decisive time. Thus, although most teachers and counselors supported tracking procedures based on standards and objective measures, there are ways in which these "objective" placement procedures led to a stratified math educational system in this district.

Teacher Input

Many teachers said that besides using the criteria of the policy in place at their school, they had input and other criteria they used to place students. At the intermediate schools, for example, some teachers felt that the scores on the placement tests did not reflect where they believed the student should be placed. They could advocate for the students' placement to be different than what the test scores determined. It is here that racial-ethnic prejudices could come to the fore and racial-ethnic disparities could occur. Although the respondents in my study did not report any concrete instances of this happening, the influence of teachers' subjective assessments in tracking creates the *possibility* for this to occur. That is, allowing room for teacher discretion creates a window of opportunity for teachers' prejudices to manifest themselves through placement modifications. As the teachers themselves admitted, they might "go up to bat" for students in whom they see promise or for students with whom they have a close

relationship. Given that these are mostly white, non-Hispanic teachers, it is reasonable to suspect that these students might be similar to the teachers in racial-ethnic background.

When asked about their own explanations for racial-ethnic disparities in math tracking, teachers emphasized language, culture, and migrant status. These are quite reasonable explanations for these disparities. But there was little evidence that teachers attempted to overcome these barriers to ensure that students of color who demonstrated math ability would be placed in a higher math track. Without some intervention, it is possible that these extraneous factors might override the importance of math ability, contradicting the faith that teachers had in "objective" measures of math ability and its role in math placements.

Parent Participation

The issue of parental participation complicates the ability of students of color to negotiate their way into higher tracks. As was mentioned in chapter 4, many teachers and counselors believe that parents of color feel uncomfortable in the school, or do not know they have a right to question the placement of their students. Some educators said that they do have activities to try and make all parents, including parents of color, feel welcome in the school setting. But language and cultural barriers may restrict parent involvement in important placement decisions involving students of color. If parents of color do not question the authority of the school system, their child might possibly remain on the track that has been designated for them either by the policy or by an educator. Without this type of examination by parents, teachers could possibly place students of color on the lower track without any type of inquiry by the parents. What is

missing in the case of both teacher input and parent participation is an advocate for students of color who have the potential, the motivation, and even the ability to succeed in a higher math track. Barring such an advocate, students of color are likely to find themselves channeled into lower math tracks.

There is also a surprising lack of parent-teacher communication when it comes to the placement procedures. Parents may not understand the consequences of their student's math placement because they are not sufficiently informed about the short and long-term costs and benefits the placement may have. For this reason, there may be fewer parents who contest tracking decisions based on the lack of information given to them by the school system.

Student Involvement

Teachers mentioned that there were instances in which students wanted to be with their peers in math classes. Since the district was shown to have a disproportionate number of students of color in the lower track, this could lead students of color to request enrollment in the lower tracks and the white students to aspire to be in the higher tracks. This would perpetuate the overrepresentation of minority students in the lower tracks. If educators allow this to take place, then the situation becomes more troublesome.

Another reason that may cause students of color to group themselves in the lower track is Fordham and Ogbu's (1986) notion of "acting white." Students of color, because of the tracking system or the educational system in general, may feel that to excel is out of place for them because they are people of color and educational success is deemed a white behavior. As such, they will fight against "acting white" and therefore request to

be placed in the lower tracks with their co-ethnic peers. Because I did not interview students in this study, I can not say whether this phenomenon is occurring in this district. But, again, student influence in placement decisions could make this a possibility.

Recommendations

My data suggest that uniform and unbiased tracking policies, culturally sensitive educators, and improved communication between educators and students could help reduce the likelihood that racial-ethnic minorities are channeled into lower math tracks. First, the district could provide policies that are followed by every educator in the district who has a role in placing students in math tracks. If there is an action that is contrary to the district policy, the teacher or counselor could be required to report it and be given approval by the principal or district specialist, with documentation placed in the student's file. The district might also examine the current placement procedures. As was shown in the study, there are more Hispanic students in the lower tracks. One reason may be the format of the placement and trimester tests used by the district. According to Altshuler and Schmautz (2006), high stakes testing can negatively affect students' self concept of their ability, especially Hispanic students. The district needs to protect the students against the "value conflicts inherent to test design and procedures serve to systematically discriminate against Hispanic students" (Altshuler & Schmautz, p.11). The district also needs to review alternate assessments in relationship to the placement procedures that are culturally valid (Alshuler, & Schmautz).

To reduce the possibility of educator bias in the tracking process, the district could offer in-services to teachers about different cultures and languages and how to best

teach these students. District personnel could also acknowledge and recognize cultural differences and teach a multicultural curriculum. For example, the district could send representatives to attend the National Association for Multicultural Education (NAME) conference held each year. These conferences include topics related to multilingual students, refugee, students, and culturally relevant curriculum. They could also investigate and attend other conferences that would help the district meet the needs of their racial-ethnic diverse population. In the end, the district needs to make sure that educators hold all students to high expectations regardless of race, ethnicity, language, or perceive "ability."

Probably the most important finding to come from this study is the lack of communication between educators, students, and parents. Currently, students and their parents are relatively ignorant of the importance of placement tests and math placement decisions in terms of their future potential for college and career success. The district needs to create a process to ensure that students of color, especially Hispanic students, receive counseling and instruction that provides these students with the knowledge of consequences related to their math placement. One way this could be done is by doing the Student Educational and Occupational Plan (SEOP) conferences in the 5^{th} or 6^{th} grade with all students and their parents. The counselors could go through and discuss what the different tracks would look like and their consequences for college admission and career choices. At the very least, full disclosures should be made to students and their parents about the importance of math testing and placements.

Limitations of the Study

This study should be examined with the following restrictions in mind. First, this is a case study of one rural district. Because we were not able to generate a random sample for this data, it is not possible to generalize to all school districts, especially urban districts and districts outside of Utah, which tend to have a greater number of students of color. Box Elder School District has very few students of color and fewer teachers of color. It is possible that tracking procedures – both official and unofficial – are distinct in districts with more students of color.

This research is also based on interviews conducted with a small number of math teachers and counselors within one district and includes educators' knowledge and expertise at only one point in time. My being Japanese American might also have had an influence on the responses of those I interviewed. For example, teachers might have been hesitant to express racist beliefs due to my ethnicity. As well, I am a teacher in the school district and educators might have been cautious about what they said because we work in the same district and know the same people.

Given the exploratory nature of the study, key data came from interviews of teachers and counselors about their teaching and counseling experiences in relationship to math placement. These teachers were interviewed on a voluntary basis and may have agreed to participate because they had a particular view about what the district policies should be.

Future Research

The district in this study differs racially and socioeconomically from more urban and racially and ethnically diverse school districts in the United States. As such, future research might want to follow a similar interview protocol in districts that are more urban and racially and ethnically diverse. This would allow researchers to determine if the results here are generalizable to other school districts. Also, a larger sample size of the teachers and counselors in the district could strengthen, or cause us to rethink, the findings of this study.

Since this study found parent participation and student input to be so important in the tracking process, future studies might study how parents and students view the math placement process. By interviewing parents and students, one would be able to see the bigger picture of how placement affects students. These interviews may also show other aspects of parent participation and student input that lead students to the lower or higher mathematics tracks.

Finally, in this study, student placements in mathematics tracks were analyzed only at the intermediate and middle schools at one point in time. It would be interesting to do a longitudinal study of students who are placed in different tracks from 7^{th} grade onward to see what the difference were in testing scores, graduation rates, college attendance, and career pathways taken by students in each of the tracks. This would help determine if racial-ethnic disparities in math placements translated into racial-ethnic disparities in the labor market.

REFERENCES

Altshuler, S.J., & Schmautz, T. (2006). No Hispanic student left behind: The consequences of "high stakes" testing. *Children and Schools, 28*(1), 5-14.

Anderson, J.A. (1994). Examining teaching styles and student learning styles in science and math classrooms. In M.M. Atwater, K. Radzik-Marsh, & M. Strutchens (Eds.), *Multicultural education: Inclusion for all* (pp. 93-105). Athens: University of Georgia Press.

Ansalone, G., & Biafora, F. (2004). Elementary school teachers' perceptions and attitudes to the educational structure of tracking. *Education, 125*(2), 249-258.

Brewer, D.J., Rees, D.I., & Argys, L.M. (1995). Detracking America's schools: The reform without cost? *Phi Delta Kappan, 77*(3), 210-215.

Brown, F., Carter, D.G., & Harris, J. J. (1978). Minority students, ability grouping, and career development. *Journal of Black Studies*, *8*(4), 477-488.

Burris, C.C., Heubert, J.P., & Levin, H.M. (2006). Accelerating mathematics achievement using heterogeneous grouping. *American Educational Research Journal, 43*(1), 105-136.

Canham, M. (2005, July 24). Mormon portion of Utah population steadily shrinking. *Salt Lake Tribune*. Retrieved November 7, 2007, from www.sltrib.com

Clark, J. (1999, May). Minorities in science and math. (*ERIC Document Reproduction Service No. ED433216)* Retrieved December 20, 2007, from ERIC database: http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED433216

Cooley, C.H. (1902). *Human nature and the social order.* New York: Charles Scribner's Sons.

Cooper, C.R., Cavira, G. & Mena, D.D. (2005). From pipelines to partnerships: A synthesis of research on how diverse families, schools, and communities support children's pathways through school. *Journal of Education For Students Placed at Risk*, *10*(4), 407-430.

Entwisle, D. R., & Alexander, K.L. (1993). ENTRY INTO SCHOOL: The beginning school transition and education stratification in the United States. *Annual Review of Sociology, 19*(1), 401-423.

Fiedler, E. D., Lange, R. E., & Winebrenner, S. (2006). In search of reality: Unraveling the myths about tracking, ability grouping, and the gifted. *Roeper Review, 24*(3), 108-111.

Fordham, S., & Ogbu, J. (1986). Black student's school success: Coping with the burden of "acting white." *Urban Review 18*(3), 176-206.

Gamoran, A. (1992). The variable effects of high school tracking. *American Sociological Review, 57(*6), 812-828.

Grossman, F.D, & Ancess, J. (2004). Narrowing the gap in affluent schools through collaborative action research, three suburban school districts are creatively confronting achievement differences. *Educational Leadership, 62*(33), 70-73.

Hallinan, M.T. (1990). The effects of ability grouping in secondary schools: A response to Slavin's best-evidence synthesis. *Review of Educational Research, 60*(3), 501-504.

Hallinan, M.T. (1994). Tracking: From theory to practice. *Sociology of Education, 67*(2), 79-84.

Hallinan, M.T. (2004). The detracking movement: Despite the efforts of the educational progressives, tracking remains standard practice. *Education Next, 4*(4), 72-76.

Heck, R.H., Price, C.L., & Thomas, S.L. (2004). Tracks as emergent structures: A network analysis of student differentiation in a high school. *American Journal of Education, 110*(4), 321-353.

Hill, D. (2004). The mathematics pathway for all children. *Teaching Children Mathematics, 11*(3), 127-133.

Hoff, D.J., & Archer, J. (2000). One test is not enough, math educators say. *Education Week, 20*(14), 12.

Houtte, M.V. (2006). Tracking and teacher satisfaction: Role of study culture and trust. *The Journal of Educational Research, 99*(4), 247-254.

Hrabowski, F.A. III. (2002). Raising minority achievement in science and math. *Educational Leadership, 60*(4), 44-48.

Hudley, C. (1997). Supporting achievement beliefs among ethnic minority adolescents: Two case examples. *Journal of Research on Adolescence, 7*(2), 133-152.

Jaeger, R.M., & Hattie, J.A. (1995). Detracking America's schools: Should we really care? *Phi Delta Kappan, 77*(3), 218-219.

Kariya, T., & Rosenbaum, J.E. (1999). Bright flight: Unintended consequences of detracking policy in Japan. *American Journal of Education, 107*(3), 210-230.

Kershaw, T. (1992). The effects of educational tracking on the social mobility of African Americans. *Journal of Black Studies*, *23*(1), 152-169.

Kohn, A. (2005). Unconditional. *Educational Leadership, 63*(1), 20-24.

Kulik, J. A. (1992). *An analysis of the research on ability grouping: Historical and contemporary perspectives.* Storrs, CT: National Research Center on the Gifted and Talented.

Lewis, A.C. (2006). Redefining what high school students learn. *Phi Delta Kappan, 87*(8), 564-565.

Loveless, T. (1998). *The tracking and ability grouping debate.* Thomas B. Fordham Foundation. Washington, DC. Retrieved January 1, 2007, from http://edexcellence.net/foundation/publication/publicationcmf?id=127

MESA USA. (n.d). *About MESA.* Retrieved March 7, 2007, from http://www.ucop.edu/mesa/about/index.html

National Science Foundation, Division of Science Resource Statistics. (2007). *Women, minorities, and persons with disabilities in science and engineering.* NSF 07-315. Arlington, VA.

Oakes, J. (1985). *Keeping track: How schools structure inequality*. New Haven, CT: Yale University Press.

Oakes, J. (1995). Two cities' tracking and within-school segregation. *Teachers College Record, 96*(4), 681-690.

Oakes, J., & Guiton, G. (1995). Matchmaking: The dynamics of high school tracking decisions. *American Educational Research Journal*, *32*(1), 3-33.

Oakes, J., & Wells, A.S. (1998). Detracking for high student achievement. *Educational Leadership, 55*(6), 38-41.

Oakes, J., Wells, A.S., Jones, M., & Datnow, A. (1997). Detracking: The social construction of ability, cultural politics, and resistance to reform. *Teachers College Record, 98*(3), 482-510.

Ogbu, J.U. (1994). Racial stratification and education in the United States: Why inequality persists. *Teachers College Record, 96*(2), 264-298.

O'Neil, J. (1992). On tracking and individual differences: A conversation with Jeannie Oakes. *Education Leadership, 50*(2), 18-21.

Powell, M. (2003). Effects of school types on educational attainment: Great Britain and the U.S. compared. Conference papers—American Sociological Association. Atlanta, GA.

Rech, J.F., & Harrington, J. (2000). Algebra as a gatekeeper: A descriptive study at an urban university. *Journal of African American Men, 4*(4), 63-71.

Report highlights of importance of middle school math. *Black Issues in Higher Education, 20*(19), 11.

Resnick, L.B., & Nolan, K. (1995). Where in the world are world –class standards? *Education Leadership 52*(6), 6-10.

Schoenfeld, A.H. (2002). Making mathematics work for all children: Issues of standards, testing, and equity. *Educational Researcher, 31*(1), 13-25.

Scott, R. (1993). Untracking advocates make incredible claims. (Response to the views of Jeannie Oakes, Anne Wheelock and Barbara Nelson Pavan). *Educational Leadership, 51*(2), 79-81.

Scott, R. (2001). Tracking in schools: can American social scientists objectify such a sensitive topic? *Mankind Quarterly,* 42(1), 47.

Smith, R.A. (2006). *Latina immigrants in non-traditional destination: The case of northern Utah.* Unpublished master's thesis, Utah State University, Logan.

Spielhagen, F.R. (2006). Closing the achievement gap in math: Considering eighth grade algebra for all students. *American Secondary Education, 34*(3), 29-42.

Sternberg, R.J., & Davidson, J.E. (1986). *Conceptions of giftedness.* New York: Cambridge University Press.

Tieso, C.L. (2000). *The effects of grouping and curricular practices on intermediate students' math achievement.* Unpublished doctoral dissertation, University of California, Berkley.

Tieso, C.L. (2003). Ability grouping is not just tracking anymore. *Roeper Review, 26*(1), 29-36.

Utah State Board of Education. (2006). *Utah State Board of Education mission statement.* Retrieved July 30, 2007, from http://www.schools.utah.gov/board/DOCS/Brd%20Mission%20Stmnt.pdf

U.S. Bureau of the Census. (2006). *People and households.* Retrieved October 3, 2007, from http://www.census.gov

Van Haneghan, J.P, Pruet, S.A., & Bamberger, H.J. (2004). Mathematics reform in a minority community: Student outcomes. *Journal of Education for Students Placed at Risk, 9*(2), 189-211.

Welner, K.G., & Oakes, J. (1996, Fall). (Li)Ability grouping: The new susceptibility of school tracking systems to legal challenges. *Harvard Educational Review, 66*(3), 451-470.

Wenglinsky, H. (2004). Closing the racial achievement gap: The role of reforming instructional practices. *Educational Policy Analysis Archives, 12*(64). Retrieved December 21, 2006, from http://epaa.asu.edu/epaa/v12n64

APPENDICES

Appendix A: Interview Protocol

1. Could you state your name, title, and job description?
2. How many years have you been in education?
3. How many years have you been at this particular location and job title?
4. What are the different mathematics placement options at this location?
5. What are the course placement procedures at this job location?
6. What are the exceptions or deviations, if any, to the mathematics course placement?
7. Are there unlimited sections for each course?

8 What is the curriculum for your mathematics courses?

9. What is the role, if any, that parents play in placing students on different tracks?

10 What is the role, if any, that teachers play in placing students on different tracks?

11. What is the role, if any, that counselors play in placing students on different tracks?
12. What is the role, if any, that administrators play in placing students on different tracks?
13. What is the role, if any, that students play in their mathematical choice?
14. How easy is it for students to move from a lower track into a higher track? If students have mobility from track to track, what does the school do to help in that process?
15. What is your opinion of tracking in education, and more specifically in mathematics?

16. Do you know what it means to detrack a school?

17. If this school was “detracked” how do you think that would work?

Appendix B: Email Request for Interview Participation

Hello,

My name is Megan Haramoto Bushnell. I am a math teacher at Box Elder Middle School and I am working on my master's degree through Utah State University. I am researching the mathematics placement in Box Elder School District. I'd like to explore how educators and parents make decisions about what math class students should be placed in, otherwise known as "tracking." I have cleared my research with Superintendent Menlove.

I would like to interview you about this research. I'll be focusing on the criteria that counselors/teachers use in making the decision about which classes to place students. Please let me know if you would be willing to participate. The interview will last about 30 minutes. Please also let me know what dates and times you will be available for the interview.

Thank you for your time and consideration. Please call me or e-mail me with any questions you may have.

Megan Haramoto Bushnell

BEMS

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