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High-Stakes Tests Require High-Stakes Pedagogy

Randy Lattimore, *Wayne State University*

High-stakes mathematics tests continue to gain popularity in the United States, with an increasing number of states setting the passing of such tests as a high school graduation requirement. Consequently, instruction and instructional content have changed, with teachers emphasizing materials on the test while neglecting other important aspects of learning. The tests have become all-consuming, taking over many students' lives. Yet students are often ill prepared for these tests. This is even more true for African-American students whose cultural and social circumstances make their preparation for high-stakes tests inadequate and ineffective. The author examines six such students – their hopes for the future, their preparation for the tests, and the impact of the tests on their lives.

Introduction

Despite mounting concerns about the high-stakes mathematics test performance of US students, schools continue to employ a variety of untested and unproven practices which are said to be “innovative” (Carnine 40; Marshall 102-106). Proponents and opponents of high-stakes tests including Douglas Fisher et al., Ivor Pritchard, and William A. Firestone et al., point out the highly negative consequences of such testing relative to underrepresented groups. More specifically, even the limited amount of literature that is available does not address the impact of high-stakes mathematics tests on African-American high school students. However, all educators and policy makers will recognize one point, that high-stakes tests are now or shortly will be used in a majority of the states (Natriello and Pallas).

A 1999 report by the American Federation of Teachers indicated that 23 states had examinations as a requirement for high school graduation, up from eighteen in 1998 (Heubert and Hauser). The number of states in

the process of developing examinations that will be required for high school graduation is expected to increase to 29 by 2003 (Shore, Madaus, and Clarke 1-7). The American Federation of Teachers reported that of the 23 states, fourteen now set graduation-test standards at the tenth-grade level or higher and use the standards to hold students back a grade, withhold students' diplomas, or to punish teachers, principals, and schools that perform poorly.

In this paper, a critique of high-stakes tests, particularly for minority students as a requirement for high school graduation in public school districts in this country will be discussed. A qualitative research study regarding the importance of the preparation experiences of six African-American students involved in a high-stakes mathematics test is then presented. Finally, implications are discussed for further research in mathematics education.

High-Stakes Tests and Minority Students Unintended Deleterious Repercussions

Historically, high-stakes testing in the US has been used to diagnose and classify students, and to assign them to educational treatments (Madaus). Heubert and Hauser noted that proponents and opponents of graduation testing agree there exists relatively little research that addresses the consequences of such testing. There exists however, perceived negative consequences of such tests among some groups. For example, some Michigan parents in an affluent school district refused to allow their children to take a high-stakes standardized test when they perceived that it might be harmful to their children in terms of future college admissions (Johnston). Unfortunately, relatively few parents in urban districts have that option when it comes to their children. It is therefore important to evaluate closely the claims and possible ramifications of the detrimental consequences of high-stakes testing on low-income and minority students.

Milbrey W. McLaughlin (250-251) associated the following possible negative fallout with high-stakes testing schemes:

- discouraging classroom innovation, risk-taking, and invention;
- forcing out of the curriculum the very kinds of learning – higher-order thinking and problem solving that educational theorists, and others say are most important to “increase national competitiveness” and success in the world marketplace.

In general, high-stakes testing affected both the content and the

sequence of instruction, and efforts to affect test scores directly increased as the testing date approached. Smith and Rottenberg found that testing reduced the time available for ordinary instruction. Schools were also neglecting material not on the tests, while encouraging the use of instructional methods resembling testing, such as multiple-choice exams.

Shepard and Dougherty found that teachers gave greater emphasis to basic skills instruction and that non-tested content suffered because of the focus on standardized tests. Herman and Golan also found that teachers spent an inordinate amount of time preparing for tests. Consistent with Shepard and Dougherty, they found that teachers were spending class time on worksheets covering test content and format. Teachers also changed the content and sequence of instruction throughout the year to accommodate the high-stakes test. Should the curriculum change to improve standardized test scores? Rodgers, Paredes, and Mangino examined the effects of the Texas Educational Assessment of Minimum Skills (TEAMS) which is a test that students needed to pass in order to graduate from high school and receive a high school diploma. Rodgers et al., found that basic skills, as measured on the Tests of Achievement and Proficiency (TAP), increased as a result of the minimum competency exam, but that higher-order skills remained the same in Texas. They concluded that districts should be cautious about narrowing the curriculum and letting higher order skills suffer for the sake of improving test scores.

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Advantages and Disadvantages of High-Stakes Testing

A description of the advantages and disadvantages of high-stake testing programs shows that some of these effects may at first glance appear to affect only the curriculum or the teacher, but ultimately they affect what and how students study and learn and what they come to value in the educational process. Stephen P. Heyneman noted important advantages and disadvantages that have been attributed to high-stakes tests:

- They are relatively objective and are an impartial means of distributing educational benefits.
- Preparation for high-stakes tests often overemphasizes rote memorization and cramming by students and drill-and-practice as a teaching method.

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- The use of examinations for the dual purpose of certifying the completion of a secondary education and for university admission puts those not bound for college at a disadvantage.
 - Results for individual students are often used to serve a variety of purposes for which they may not be designed.

Highlighting some of the advantages and disadvantages of testing provides a starting point for an educational venture. Some policies have sought to “hold schools accountable” by using the test scores to trigger rewards, sanctions, or remedial actions (Darling-Hammond; Lieberman). Darling-Hammond asserted that the negative effects of high-stakes test stem partly from the nature of the tests and partly from the way in which the tests have been used for educational decision-making. Lieberman posited that developing a system of accountability can be an impetus for raising standards, reforming schools, and rethinking American education. If these tests are to be effective, then they must be consistently aligned with what is taught, what is learned, and what is assessed.

Ohio’s High-Stakes Test

A review of the legislative objectives relating to the contemporary statewide testing trend reveals a plethora of hopes and expectations that diverge somewhat across states but have many elements in common.

Rather than reduce the list to a set of statistics, examples will be used to convey the character of these objectives. Legislation in the state of Ohio will be discussed. Ohio’s Statewide Proficiency Test went into effect at the beginning of the 1990-91 academic year. By an action of the State Board of Education, all students who entered the ninth grade prior to the 1990-91 school year, even those who dropped out of school and re-entered after September 1990, are bound by the new high school graduation requirements.

If these tests are to be effective, then they must be consistently aligned with what is taught

The Ohio Proficiency Examination, commonly called the Ninth Grade Proficiency Test is a criterion-referenced test designed to assess competence on a designated minimum on reading, writing, mathematics, and citizenship skills.

In order to receive a high school diploma, students are bound by the policy and must pass all four skills areas of the examination (i.e., reading, writing, mathematics, and citizenship) in addition to fulfilling the regular graduation requirements. The test is initially administered during the fall of a student’s ninth-grade year. Students failing the first attempt are

retested in the spring as well as the fall and spring of their tenth, eleventh, and twelfth-grade year. Thus, each student receives eight opportunities to pass the test prior to the time of his or her graduation. I discuss the six students and their preparation experiences for a high-stakes mathematics test in the next section.

The Six Students

Below are descriptions of six African-American tenth graders from a large urban high school in central Ohio. The students are Snuffi, Jasmine, Wanda, Tia, Art, and Boo (not their real names). These students passed the other parts of the test which were citizenship, reading, and writing. They were active in extracurricular activities such as music, theater, and school sports. All but one had stated goals for their future. Snuffi wanted to be an elementary teacher, Wanda wanted to be a law enforcement officer, Tia wanted to be an accountant, Art wanted to be a pharmacist, Boo wanted to be an architectural engineer, while Jasmine was undecided as to her future goal. They had done everything that school administrators, teachers, and parents have required, but their test performance did not show their hard work.

Snuffi

Snuffi is a 15-year old African-American male. In his spare time he collects pogs, baseball cards, plays video games, and talks on the telephone to his girlfriend. He spends a great deal of his time and energy raising, and playing with his two dogs and one cat. Learning is valued and fostered in his family. Everyday before he can talk on the telephone or play video games he has to complete his homework. An emphasis on learning is also evident in his family's career choices. His mother is a teacher's aide at an elementary school and his stepfather is a physical therapist. Snuffi's goals are to graduate from high school, then graduate from college, and become an elementary school teacher. His goal of becoming an elementary teacher is based on the good things he has seen his mother do with her students in her role as a teacher's aide. He believes he has a good chance of becoming an elementary school teacher because he has heard that they are looking for a "few good men."

Jasmine

Jasmine is a 15-year old African-American female undecided on her future goals. Her extracurricular activities include participating in Double Dutch (a jump rope game), playing on the high school basketball team, and being a member of Future Homemakers of America (FHA). She describes herself as being very selfish, looking out for

herself and no one else. Jasmine believes things should go her way or “no way at all.” She has struggled with the notion of being a serious student or being the mediocre student that has led to the rough life, which included her participation in gang rituals and the initiation ceremonies of new gang members. She knows it is important to learn mathematics because “mathematics is everywhere” and she knows she needs some mathematics skills, but she considers herself lazy.

Wanda

Wanda is a 15-year old African-American female who is growing up in a family in which a college education is not valued; neither of her parents received four-years of high school education. She lives in a large five bedroom house with her grandmother, niece, uncle, sister, and brother. Her hobbies consist of reading African-American literature, singing, dancing, playing the saxophone, and talking on the telephone. She enjoys discussions on controversial topics such as sports, gangs, and racism. She loves collegiate and professional basketball and football. Wanda enjoys listening to jazz, rhythm and blues, and rap. She is a very outspoken young woman who is well liked by her peers at Hysteria (the name given to the school in the study). At home she likes to curl up with a good novel while drinking a cup of Kool-Aid. She also reads to her little niece. Though she loves to read, she does not like to be put on the spot. She admits reading for school purposes has been a turn-off because as a child she was forced to read and memorize everything.

Tia

Tia is a 16-year old African-American female who wishes to become an accountant. Because she likes to work with numbers she needs all the mathematics courses she can take. Tia does her homework as soon as she comes home. Once the homework is complete, she may have time to play some games on the computer before going off to work. She enjoys playing the flute, talking on the telephone, going to work, and playing on the computer. She especially enjoys working with numbers, equations, and formulas that help her solve certain mathematics problems. Tia lives with her mother who works as a claim examiner at the state’s unemployment office. She was encouraged by her middle school mathematics teacher to take college preparatory mathematics classes in high school.

Art

Art is a 16-year old African-American male who wishes to become a pharmacist. His hobbies are drawing, riding his bicycle, weightlifting, and repairing old cars given to him by his father. The collection so far consists of a 1987 Escort G.T. and a 1986 Buick Regal. He describes himself as not being spoiled and as doing productive things.

Boo

Boo is a 16-year old African-American female. She lives with her mother and four siblings in a fairly decent neighborhood on the south side of this large central Ohio city. During our interview Boo often comments on the closeness of her family and her love for her siblings. Her hobbies include drawing, singing, dancing, and acting. She is a member of the cheerleading squad, captain on the Army ROTC drill team, and a member of her school's softball team. At age 12, she participated in a modified version of the Broadway musical "Cats." That was the highlight of her life. Boo believes she was born to be in the spotlight. She said all of her siblings aspire to attend college and major in education, medicine, or law. Boo works as a cashier at a local restaurant in the city.

Resilience to Achieve in the High-Stakes Storm

According to these students, the test is taking over their lives.

Tia explained:

I have grown tired of coming to school and taking the test for two hours.

Art echoes the comment:

I admit the test is important because if I do not pass it, it will hurt me eventually because I want to have College Preparatory written on my diploma and if I do not pass the test, this will not happen.

In the closing conversation with Boo:

Randy: How do you feel about not having passed the test so far?

Boo: I do not like it, but I cannot help it.

Randy: What keeps you motivated to keep taking the test?

Boo: I want to pass it so I can go to college.

In fact, the test is their life. The reality reflected in these statements suggests that few studies have given voice to African-American students to assess the impact of these tests on their lives. By all accounts, the testing process for African-American high school students in high-stake test districts is a complicated one that does not take into consideration the influence of their culture in the preparation process (Heubert and Hauser; Natriello and Pallas; Willingham and Cole; New York Urban League, Inc. v. New York). Programs and solutions developed by educational institutions are based on models that do not fit the

circumstances of the students (New York Urban League, Inc. v. New York).

Another approach that was detrimental to the preparation process of these students was the last minute preparation of the students. Which is an indicator of their perceptions of the value of the test. For example, two of the research participants stated:

Art: I had begun to study weeks before the test rather than two weeks before the test or the night before the test, relieving the pressure of learning everything at once. I reviewed my math notes for a half-hour a day to help me prepare for the proficiency test.

Snuffi: Well, if you start studying at the last minute, you get nervous and stuff like that. You do everything in a hurry and you get nothing done.

Two other participants stated:

Tia: I admit that last minute cramming led me to be confused about the information I was trying to cram into my head.

Jasmine: Because when you cram stuff, then when you look at the paper, it all gets mixed up, then you get confused because you done cram so much and tried to memorize in that night and so it does not help. It helps if you look at this part one day and look at the next section the next day, then you can remember more.

Two other research participants echoed those responses:

Boo: Because you get all confused in stuff and you need more time to study your work, and more days or a couple of hours then it will not all be crammed in there and you will be ready.

Wanda: Because you have to cram it all in, and when you get ready to take the test. You have forgotten it all.

From a very passionate discussion with these students the need to implement alternate strategies or preparation techniques was voiced because of the ineffectiveness of the methods already in place in the school. For example, two of the participants said:

Art: If you try to cram everything in at the last minute, then you are going to forget something. It is a rush, and it is a rush on your mind.

Snuffi: Preparing for the proficiency test has been memorization. Memorization means being sent home from school with a ton of worksheets that I am to study several weeks before the test and then being tested by a practice test during my regular mathematics class. I felt like I had adequately prepared for the test. When I took the test I felt really confident. I had been studying all my preparation materials. I felt some of the material on the test was very simple. Some parts were very difficult and I kept checking them over and over until it was time to turn in the test. I feel the mathematics section of the test is really something I want to pass because it is deciding my life.

Three of the participants captured the essence of the other students' remarks:

Tia: You cannot study and think over it the way you want to. You are trying to cram it, and the information you are cramming in is not clear.

Jasmine: My preparation for the test has been listening to the math teacher in class, taking a practice proficiency test and then watching the teacher go over the practice test. The teachers, in my opinion, are not doing all that they should be doing. They offer after school help, help during lunch period. I feel they try to help for the most part.

Wanda: The teacher should give the practice materials earlier and stop waiting until the last minute to give the practice testing materials.

Throughout the interviews there was a surprising lack of bitterness from the participants. They did not seem to be irritated by the consequences that this test lends itself. To them it seemed to be another obstacle, and since their schooling has been replete with obstacles and barriers, they saw it as another barrier to cross. In some absolute sense, the test was difficult for them, they failed, but they vacillated as to the difficulty or ease of the test. It was a very consistent comment from the participants that the content of the test changed each time it was taken. The

mathematics preparation of these students by their teachers and the school, in particular, could serve as one reason for their failure.

It is known by empirical evidence that some of the same “turn offs” of mathematics experienced by students are experienced by the teachers who teach them and so the teachers convey the message of the difficulties of mathematics. Teachers who dislike mathematics while at the same time teaching the subject pass negative messages to the students, the people who most need a positive attitude. From an analysis of the observations on mathematics teaching the most productive type of mathematics problems were the ones which required engagement. When problem-solving in groups and working with manipulatives students had positive attitudes about mathematics. When performing drill and practice, memorization and rote, as well as computation out-of-context, students were most often bored with learning and felt low levels of engagement. The types of problems engaged in had an observable impact on the participants’ attitudes and reactions during the mathematics class.

Case studies such as these are useful, although they may not be generalizable. These case studies address an important phenomena, the mathematical classroom experiences of students in preparation for a high-stakes test. The implication of the findings obtained here led to a consideration of the critical elements that determine success in urban mathematics classrooms. These elements are: mathematics must be fun, mathematics must be challenging, and mathematics must be interesting. Is it appropriate motivation, attitude, or predisposition, or is it what happens to students once they begin to prepare for the test? That leads to success, it is, most likely, some of both. I concluded, however, from the evidence provided by Snuffi, Jasmine, Wanda, Tia, Art, and Boo’s cases that the assumptions about the students held by researchers and practitioners, and students’ actions in preparation for the tests, can be a powerful indicator as to the student’s success in the mathematics classroom. To pass the test students must receive proper preparation in a timely fashion. Furthermore, students must act in accordance with a coherent theory of pedagogy that provides a framework for appropriate learning experiences. Certainly, many factors contributed to the inadequate preparation of the students, but one aspect of this complex and multidimensional processes of teaching and learning must be held accountable, and that is the pedagogy provided by the teacher. In summary, these students perceived the test as a barrier, they remained hopeful, although they realized the test was an impediment. It is particularly interesting that according to these students, at best, these

imposed pressures tended to create an improvement in their sense of self and instill a committed passion for learning and passing the test.

Implications for Research in Mathematics Education

These students' experiences convince me that by creating a space to narrate and renarrate their stories so as to act on them, we can improve mathematics performance on statewide proficiency tests by developing appropriate and effective teaching strategies. Students are not passive recipients of teacher instruction but are active interpreters of the classroom environment (Weinstein). An important framework for seeing what is happening in mathematics classrooms is found in the work of Lave and Wenger. This framework gives us an understanding of situated learning, or situated cognition. It provides a notion of complexity. This might be thought of as "complexity theory" (Casti). Situated cognition suggests that individuals do not learn in a vacuum. Rather, learning occurs in multiple social contexts.

Thus, success in mathematics of African-American students is deeply embedded in a variety of social contexts (Tate; Ladson-Billings). Besides changing the names of story problem characters, teachers will also need to understand the deep structures of students' experiences. This may mean doing some things with students that have not been done in the traditional mathematics classroom like, interviewing them, having them write autobiographies, and discussing their interests in mathematics (Ladson-Billings).

Teachers provide the experiences that exert powerful influence on students' attitudes about mathematics. However, to learn mathematics, students must want to learn and feel good about learning (NCTM; Kenney and Silver; Mullis et al.). Educators must be aware of situations that can cause low engagement, and work with students in ways that increase engagement levels by providing mathematics curricula and pedagogy that take full advantage of the "adaptive", "resilient", "complex" nature of learners in urban mathematics classrooms (Ladson-Billings 706).

There exists an abundance of literature that documents the mathematics failure of African-American students. This discussion is however not an effort to rationalize the poor performance of African-American students on high-stakes tests. Rather the focus is to address important phenomena for understanding high-stakes testing. The implications of the findings obtained here lead to a consideration for the

implementation of the critical elements that determine the success of high-stakes tests in urban settings. These interviews provide evidence that the assumptions made about these tests can have a powerful influence on the learners' success. What can be seen is that teachers could teach better if they knew their students better.

Unfortunately, five of the individuals in this study were unable to successfully pass the test (Tia successfully passed on her fourth attempt). Clearly, better preparation of students is vital if these kinds of statistics are to be avoided.

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