American Educational Research Journal
December 2014, Vol. 51, No. 6, pp. 1084–1118
DOI: 10.3102/0002831214553705

Missing the (Student Achievement) Forest for All the (Political) Trees: Empiricism and the Mexican American Studies Controversy in Tucson

Nolan L. Cabrera
Jeffrey F. Milem
Ozan Jaquette
Ronald W. Marx
University of Arizona

The Arizona legislature passed HB 2281, which eliminated Tucson Unified School District's (TUSD's) Mexican American Studies (MAS) program, arguing the curriculum was too political. This program has been at the center of contentious debates, but a central question has not been thoroughly examined: Do the classes raise student achievement? The current analyses use administrative data from TUSD (2008–2011), running logistic regression models to assess the relationship between taking MAS classes and passing AIMS (Arizona state standardized tests) and high school graduation. Results indicate that MAS participation was significantly related to an

---

Nolan L. Cabrera is an assistant professor in the Department of Educational Policy Studies & Practice at the University of Arizona, 1430 E. Second Street, PO Box 210069, Tucson, AZ 85705; e-mail: *ncabrera@email.arizona.edu*. His research focuses on Whiteness formation and racial dynamics on college campuses.

Jeffrey F. Milem is the Ernest W. McFarland Distinguished Professor of Leadership for Educational Policy and Reform at the Department of Educational Policy Studies and Practice at the University of Arizona. His current research focuses on the ways in which colleges and universities can be organized to enhance equity, access, and success for all students; the racial context within higher education; and the relationship between how colleges and universities organize themselves and student outcomes and faculty role performance.

Ozan Jaquette is an assistant professor in the Department of Educational Policy & Practice at the University of Arizona. His research program analyzes how postsecondary institutions change their behavior to generate enrollments from desired student populations.

Ronald W. Marx is a professor of educational psychology and dean of education at the University of Arizona. His research focuses on how classrooms can be sites for learning that is highly motivating and cognitively engaging.

increased likelihood of both outcomes occurring. The authors discuss these results in terms of educational policy and critical pedagogy as well as the role academics can play in policy formation.

KEYWORDS: Mexican American Studies, ethnic studies, program assessment, HB 2281

On April 26, 2011, nine students in the Tucson Unified School District (TUSD) took over the school board meeting to protest the potential dismantling of the Mexican American Studies (MAS) program. The dramatic images of students chaining themselves to school board members' chairs made headlines nationally and have been used by supporters and detractors of the program alike. About 500 community members and over 100 police officers attended the subsequent school board meeting (Cabrera, Meza, Romero, & Rodriguez, 2013). The controversy surrounding the MAS program broiled for months, and emotions were charged. Numerous threats followed, including a Youtube™ video claiming the way to deal with student protesters was to "shoot them in the head" (Cabrera et al., 2013, p. 10). These incidents occurred after the passage of Arizona's HB 2281 (now A.R.S. § 15-112), which allowed the state superintendent of public instruction to withhold 10% of state funding if he found a district offered classes that

1) Advocate ethnic solidarity rather than treating pupils as individuals,
2) Promote resentment toward a race or class of people,
3) Are designed primarily for pupils of a particular ethnic group, or
4) Promote the overthrow of the U.S. government (Prohibited courses and classes, 2010, p. 1).

Although he never attended a MAS class or conducted an audit of these courses, State Superintendent Tom Horne found TUSD out of compliance with this statute. He asserted that modifications of the classes to align the program with the law were impossible and, therefore, "the only way in which compliance can be effective within the next 60 days is by elimination of the Mexican American Studies program" (Horne, 2010, p. 2).[1] The controversy received extensive coverage from the *New York Times*, Fox News, and CNN, and it was even a segment on *The Daily Show with Jon Stewart* (Cabrera et al., 2013). Within the education research community, this issue was the subject of an invited presidential session at the 2012 American Educational Research Association meeting, two resolutions by American Educational Research Association (2012a, 2012b), and a literature review regarding the value of ethnic studies commissioned by the National Education Association (Sleeter, 2011).

Commentators across the country debated the broader questions surrounding the MAS controversy, including, "To what extent can a

non-Eurocentric curriculum and pedagogy be sanctioned as 'legitimate education'? Additionally, can critical approaches to oppression be part of public secondary education?" (Cabrera et al., 2013, p. 20). While the program supporters pointed to the increased educational achievement that stemmed from MAS participation (Romero, 2008; Romero, Arce, & Cammarota, 2009; Save Ethnic Studies, 2011), this issue was frequently lost in the media coverage, overshadowed by the politics (e.g., Huicochea, 2011b; Martinez, 2011). Additionally, the relationship between the courses and student achievement was irrelevant to those seeking to end the program, as they believed the MAS program had no place in public education (Horne, 2010; Huppenthal, 2011).

Interestingly, all sides of this contentious issue agree that student achievement should be a focal point of public education, although they have put forth differing rationales. For example, the current state superintendent claims that student achievement is important because Arizonans should receive returns to their educational investments and having an educated populace is key to the state's economic prosperity. He further states, "I am especially committed to driving our education policies and practices with quality research that have demonstrated proven results" (Huppenthal, n.d.). Supporters of the program also argue that student achievement is important, but they frame the issue from a critical pedagogy approach (Freire, 2000). Within this paradigm, changing a student's relationship to school through Critically Compassionate Intellectualism (CCI) should lead to increased student achievement (Cammarota & Romero, 2014). The ultimate goal is developing students as educated, critically engaged citizens who are committed to transforming oppression within their communities (see Conceptual Underpinnings of MAS section for an elaborated discussion).

While both sides of the issue profess that student achievement *should* be of the upmost importance, the racial politics of the controversy have pushed students' academic success to the background. Thus, a fundamental question about MAS in TUSD was lost within this highly contentious political debate: What effect, if any, did these classes have on student academic achievement? The bulk of prior research on this subject was descriptive and therefore not able to determine impact (e.g., Cabrera, 2012; Cappellucci et al., 2011; Department of Accountability and Research, 2011a, 2011b; Romero, 2008). The current research addresses this limitation by assessing the relationship between MAS course participation and student achievement via multivariate analyses using TUSD's student-level, administrative data.

Relevant Literature and Theory

The TUSD MAS program follows in the intellectual and activist lineage of the ethnic studies programs created in the 1960s (Cammarota & Romero, 2014). Within this framework, the more Latina/o students see themselves

and their experiences reflected in the curriculum, the more likely they are to be engaged in school, leading to greater educational success. Additionally, the MAS program was developed from a critical theory paradigm (e.g., Freire, 2000). This perspective means the MAS version of ethnic studies was more than celebrating racial/ethnic difference or positive identity development but also examining, critiquing, and fighting systemic oppression (Cammarota & Romero, 2014). The high school diploma becomes important in this context because it helps stem the school-to-prison pipeline, provides students economic opportunities, paves pathways to higher education, and can improve the material conditions of the community (Cammarota & Romero, 2014; Duncan-Andrade & Morrell, 2008).

The Development of Ethnic Studies

The MAS program began with a critique of traditional forms of curricula where minority experiences and voices were noticeably absent. Ronald Takaki (1993) highlighted this issue in *A Different Mirror* when he described his choice for the book's title.

> While the study of the past can provide collective self-knowledge, it often reflects the scholar's particular perspective or view of the world. What happens when historians leave out many of America's peoples? What happens, to borrow the words of Adrienne Rich, "when someone with the authority of a teacher" describes our society, and "you are not in it"? Such an experience can be disorienting—"a moment of psychic disequilibrium, as if you looked into a mirror and saw nothing." … America does not belong to one race or one group, the people in this study remind us, and Americans have been consistently redefining their national identity from the moment of first contact on the Virginia shore. By sharing their stories, they invite us to see ourselves in a different mirror. (pp. 16–17)

These "different mirrors" created by Takaki (1993) and other scholars, including the MAS creators, were facilitated by the growth of ethnic studies programs initiated in the late 1960s in colleges and universities in the United States. Student activists were inspired by the civil rights and antiwar movements to seek transformational changes in higher education in the United States, including increased access for racial minorities, the hiring of more faculty of color, and the creation of ethnic studies programs (Hu-DeHart, 1993; Rojas, 2006). Hu-DeHart (1993) argued that this movement to create ethnic studies programs signified "the beginning of multicultural curriculum reform in higher education" (p. 51).

Historically, ethnic studies scholars believed that a key purpose of the field was to challenge the dominant discourse and paradigms of traditional academic disciplines through interdisciplinary scholarship (Delgado & Stefancic, 2001). Frequently rooted in critical approaches to education (Freire, 2000), ethnic studies scholars realized the importance of perspective

in shaping understanding of the world, that these perspectives are always limited, and that they are positioned in relationship to power (Hu-DeHart, 1993). Thus, this historical/academic lineage contextualized the MAS program's focus on issues of power and oppression, especially racial (Cammarota & Romero, 2014).

Ethnic studies is more than just a critical examination of power and perspective. Christine Sleeter (2011) offered an assessment of the character of ethnic studies by suggesting five consistent themes of the field:

> 1) explicit identification of the point of view from which knowledge emanates, and the relationship between social location and perspective;
> 2) examination of U.S. colonialism historically, as well as how relations of colonialism continue to play out;
> 3) examination of the historical construction of race and institutional racism, how people navigate racism, and struggles for liberation;
> 4) probing meanings of collective or communal identities that people hold; and
> 5) studying one's community's creative and intellectual products, both historic and contemporary. (p. 3)

Each of these components was integrated in the overall structure of the MAS program (Cammarota & Romero, 2014). There have been several studies regarding the impacts ethnic studies courses have on student development, but there are stark differences between the way higher education and K-12 scholars approach this issue.

The Impact of Ethnic Studies Courses

Scholarship in higher education using survey-based research has documented the positive impact that increased exposure to diverse information and ideas has on a range of important social, cognitive, and democratic outcomes for college students of all racial/ethnic backgrounds (e.g., antonio, 2001; Astin, 1993; Bowman, 2010a, 2010b; Chang, 2002; Denson & Chang, 2009; Engberg, 2004; Gurin, Dey, Hurtado, & Gurin, 2002; Hurtado, Dey, Gurin, & Gurin, 2003; Johnson & Lollar, 2002; Laird, 2005; Laird, Engberg, & Hurtado, 2005; Milem, 1994; Milem & Umbach, 2003; Milem, Umbach, & Liang, 2004; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996; Tsui, 1999). These studies are limited because they do not differentiate between students taking traditional ethnic studies courses (e.g., examinations of racism) and those taking ones that include a diversity component (e.g., readings by scholars of color). Thus, it is unclear to what extent a critical perspective that centers power relations is related to student development. Moreover, none of this research addressed whether taking ethnic studies courses improved students' academic performance.

Sleeter's (2011) analysis of the literature regarding ethnic studies courses in K-12 settings revealed that TUSD was the only school district in the United

States to have "a full-fledged ethnic studies program" (p. 7), and this program was soon eliminated. Hence, the body of evidence documenting the relationship between these courses in K-12 schools and student outcomes is much more limited. Some of the research Sleeter (2011) cited argued that ethnic studies curricula foster a positive relationship between racial/ethnic identity and academic achievement among students of color (e.g., Carter, 2008; O'Connor, 1997). Additionally, Sleeter cited studies demonstrating that engagement increased when students read literature written by authors of the students' racial/ethnic background (e.g., Bean, Valerio, Senior, & White, 1999; Brozo & Valerio, 1996; Copenhaver, 2001). Moreover, Sleeter found that ethnic studies curricula led to enhanced literacy skills (e.g., Krater & Zeni, 1995; Krater, Zeni, & Cason, 1994; C. D. Lee, 1995, 2001, 2006, 2007; Lomawaima & McCarty, 2006; McCarty, 1993; Rickford, 2001) and higher achievement and more positive attitudes toward learning in math and science among Native American students (Lipka, 1991; Lipka, Hogan, et al., 2005; Lipka, Sharp, Brenner, Yanez, & Sharp, 2005; Matthews & Smith, 1994). Finally, Sleeter found that ethnic studies in social studies frequently led to enhanced academic achievement and sense of agency among students (Cammarota, 2007; Cammarota & Romero, 2009; Lewis, Sullivan, & Bybee, 2006; Romero et al., 2009; Tyson, 2002).

The research Sleeter (2011) reviewed was informative but also limited in scale (i.e., single site), had no comparison group (i.e., students who did *not* take ethnic studies courses), had small sample sizes, and tended to be qualitative. The K-12 research Sleeter reviewed did show some relationships between taking ethnic studies courses and increased academic achievement. The bulk of the research Sleeter reviewed was published after the MAS program was created; thus, the MAS design was drawn primarily from a theoretical argument. There is now some justification in the empirical literature to support a positive relationship between ethnic studies participation and student achievement, but to date there has not been an assessment of these courses like the one conducted in this study. Simply put, quantitative analyses of large-scale data that explore the impact of ethnic studies on academic outcomes do not exist.

Context of the Study

Development of the MAS Program

In 2002, TUSD deputy superintendent Dr. Becky Montaño appointed Augustine Romero as head of the district's Hispanic Studies Department and assigned him the responsibility of addressing the White/Latina/o achievement gap as mandated through No Child Left Behind (Cammarota & Romero, 2014). This department was soon changed to the Mexican American/*Raza* Studies Department, and Romero, with his colleague

Dr. Julio Cammarota, developed the Social Justice Education Project in one TUSD classroom. This program identified the lowest performing students in the school and engaged them in participatory action research on the belief that it would develop in them a sense of empowerment by encouraging them to be social change agents (Cammarota & Romero, 2006a, 2006b). These classes were designed to be 1 year in length (two consecutive semesters) and counted as core social studies requirements. The first cohort had only 17 students, of whom 16 graduated from high school (Romero, 2008). Over time, the Social Justice Education Project was scaled up to include more classes and schools (Cammarota & Romero, 2014). By the 2005–2006 academic year, under the umbrella of "Mexican American Studies," the program expanded to four schools and offered language arts classes, which also counted as core class requirements. Participation in the MAS courses was voluntary, but for the cohorts included in our analyses (2008–2011), approximately one-fifth of all students who attended schools that offered MAS courses took at least one class.

Conceptual Underpinnings of MAS

MAS courses were intended to depart from the way most classes in TUSD were taught. The approach was rooted in the work of Paulo Freire (2000, 2008), especially the development of *conscientização*: the combination of critical consciousness, self-reflection, and engaging in anti-oppressive, collective action. Students learn to read the word and the world (Freire & Macedo, 1987) by situating themselves as historical subjects (Freire, 2008), seeing themselves as potential agents of social change, and developing praxis (Freire, 2000) while being critically self-reflective (Freire & Macedo, 1987).

To adapt this approach to the experiences of low-income Latinas/os in Tucson, the developers used the concept of authentic caring (Valenzuela, 1999). Authentic caring "means that the material, physical, psychological, and spiritual needs of youth will guide the education process" (Valenzuela, 1999, p. 110). This version of caring requires educators to move beyond developing students' cognitive abilities, although this is important. Rather, and specific to marginalized youth, teachers engage with the structures of oppression that inform the experiences of their students (Romero, 2008). As Valenzuela (1999) argues, it is a pedagogy that "deliberately [brings] issues of race, difference, and power into central focus" (p. 109).

To enact a curriculum derived from Freire and a position of authentic caring, the program developers asked MAS educators not to see students as blank slates but as capable people who were cocreators of knowledge (Freire, 2000). This required educators to recognize students' *funds of knowledge* (González, Moll, & Amanti, 2005), or the knowledge students

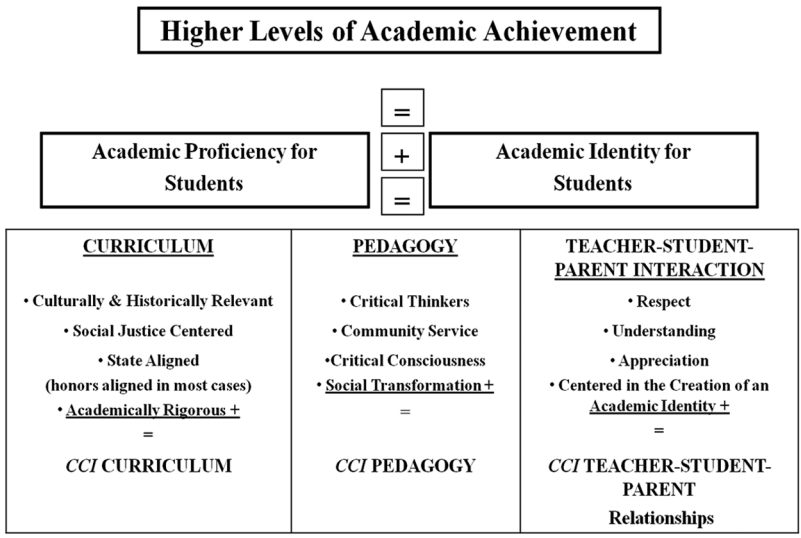

Figure 1. **Visual model of Critically Compassionate Intellectualism.**
Note. Reproduced by permission of A. F. Romero (2013, April 5).

bring into the classroom gained through their families and cultural practices. Identifying funds of knowledge in this context requires educators to blur the lines between the school and community, developing relationships with students' families and making efforts to bring the community into the school (Cammarota & Romero, 2014).

Finally, the MAS curriculum incorporated components of Critical Race Theory (CRT; Delgado & Stefancic, 2001), which places interrogations of race and racism at the center of the curriculum, as the developers intended to *racismize* the classroom (Romero et al., 2009). However, the process of racismization was not meant to ignore or even downplay other forms of oppression (e.g., sexism or homophobia). Rather, this entailed a pedagogy that centered racism in classroom discussions while concurrently examining other forms of oppression in students' lived experiences (Cammarota & Romero, 2014).

Cammarota and Romero (2014) labeled the pedagogy Critically Compassionate Intellectualism (see Figure 1). This approach required teachers to develop the critical consciousness of the students, make meaningful connections with students and their families, push students to see themselves as intellectuals, and help students become agents of change.

This shift in a student's relationship to school was intended to increase academic engagement, which in turn was expected to increase academic

performance on traditional metrics (e.g., standardized tests and graduation). This is an interesting departure from traditional Freirian pedagogy and CRT where standardized test scores are either irrelevant or oppressive. By contrast the CCI is a critical approach to education where the development of basic academic competencies is integrally related to the process of social transformation (Delpit, 2012).

MAS and Student Achievement

Prior research on the MAS program on student outcomes has been inconclusive. Some studies indicated that MAS was effective in raising student academic achievement, but these were either descriptive or qualitative (e.g., Cabrera, 2012; Department of Accountability and Research, 2011a, 2011b; Romero, 2008; Romero et al., 2009; Save Ethnic Studies, 2011). Scott (2011, as cited in Huicochea, 2011a) used descriptive analyses of TUSD student-level data and found MAS to be effective in raising academic achievement, but he argued these increases were small, similar to the effect of participating in extracurricular activities. One prior study that utilized a form of multivariate analysis to assess the impact of MAS on Arizona's Instrument to Measure Standards (AIMS) test scores found no significant impact when comparing MAS students to all other high school students in the state (Franciosi, 2009). However, students outside of TUSD are not an appropriate comparison group.

TUSD's Desegregation Plan

An initial version of this study was conducted at the request of Dr. Willis Hawley, the special master appointed by U.S. District Judge David Bury in the long-standing but unresolved TUSD desegregation case. Although the desegregation case was a different legal and policy issue than HB 2281, it touched on issues that were closely associated with MAS. Judge Bury directed Dr. Hawley to develop a unitary status plan (USP) for TUSD that would chart the path for getting out from under the 40-year-old desegregation order. The final USP entailed both integrating the schools and addressing persistent achievement gaps in TUSD between White and Latina/o students. Black students were also part of this desegregation case, but African American Student Services did not offer classes equivalent to MAS. As part of his deliberations regarding the USP, Dr. Hawley wanted to know what relationship, if any, enrollment in MAS courses had with subsequent student achievement. He requested that a research team from the University of Arizona, in collaboration with officials from TUSD, conduct the analyses.

The research team had 6 weeks to create an analytical strategy, gain institutional review board approval, secure the data from TUSD, prepare them for analyses, conduct the analyses, prepare the report, and submit it to the special master by June 20, 2012 (Cabrera, Milem, & Marx, 2012).

When the entire set of recommendations from the special master was submitted to the court, it included the research team's report, which was released to the public. As is often the case in such matters, the report was subjected to comment and critique by others, including a member of the school board (Stegeman, 2013) and journalists (Acuña, 2012; Herreras, 2012; MacEachern, 2012, 2013; Maxwell, 2012). With these critiques in mind, we have continued to refine and develop our analytical approach.

Methods

Empirical Strategy

From a program evaluation perspective, analyzing the effect of MAS participation on educational achievement is analogous to evaluating the effect of class size on educational achievement (Angrist & Lavy, 1999; Hoxby, 2000) or student aid on college attendance and completion (DesJardins, 2005). Each of these examples estimates the causal effect of a policy intervention on a dependent variable of interest. The concept of a counterfactual is critical for program evaluations of causal effects. For each subject who participates in a program, the counterfactual is what the outcome would have been if the subject had not participated in the program (Khandker, Koolwal, & Samad, 2010). Using a counterfactual approach, the average causal effect of MAS participation is estimated by calculating the difference between the actual outcome for students who participated in MAS and what the outcome would have been had they not participated in MAS. Unfortunately, counterfactuals do not exist in reality.

In cross-sectional analyses such as this one, students who do not participate in the program are used as counterfactuals for students who do (Khander et al., 2010). Random assignment is the gold standard for creating comparison groups in cross-sectional analyses, but random assignment was not possible for the MAS program, as participation was voluntary. When individuals self-select into the program, rather than being randomly assigned, estimates of the causal effect may be biased due to the omission of relevant covariates from the model. Omitted variable bias occurs when two conditions are met: (1) the omitted variable affects the outcome, and (2) the omitted variable is correlated with the independent variable of interest. When omitted variable bias occurs, the estimated causal effect is partially picking up the effect of the omitted variable on the outcome.

In the absence of random assignment, empirical program evaluations often attempt to overcome omitted variable bias by including in the model all covariates that satisfy the conditions of omitted variable bias (Stock & Watson, 2011). Our regression models attempted to include as many covariates as possible that potentially affected the outcome of interest and were correlated with MAS participation, acknowledging the limitations of using

administrative data. Alternative approaches, such as instrumental variables or regression discontinuity, that attempt to isolate exogenous variation in program participation were not feasible for the present study. Given that we attempted to eliminate omitted variable bias using covariates, interpreting regression coefficients as causal effects rests on the assumption that there are no omitted variables that affect the outcome and have a systematic relationship with programmatic participation. It is usually unrealistic for program evaluation studies to satisfy this assumption using control variables (Angrist & Pischke, 2009; Hoxby, 2000), and in particular this study omits several potentially important control variables because the only available data were administrative. Therefore, our results may suffer from omitted variable bias and should not be considered true causal effects. However, it is important to note that applying matching methods such as propensity score matching to our analysis would suffer from the same limitation.[2]

We used logistic regression to analyze the binary dependent variables of whether the student graduated from high school and passed AIMS tests after initial failure (an explanation of AIMS is in a subsequent section). Equation (1) presents the logistic regression model, where Y_i is the dependent variable, X_i represents participation in MAS, and W_i represents the matrix of controls (demographic characteristics, prior academic achievement, and school-level context).

$$P(Y_i|X_i, W_i) = \frac{e^{(\beta X_i + W_i'\delta + u_i)}}{1 + e^{(\beta X_i + W_i'\delta + u_i)}} \quad (1)$$

Therefore, the expression $P(Y_i|X_i, W_i)$ represents the probability of having a certain outcome (e.g., graduation), given MAS participation and control variables, and β represents the relationship between MAS participation on the probability of having a certain outcome. Models used robust standard errors to relax the assumption of homoscedasticity (Stock & Watson, 2011). Finally, we modeled the probability of our outcomes of interest given differing levels of programmatic participation (e.g., one class, two classes, three classes, etc.).

Data and Sample

Analyses were based on student-level administrative data in TUSD. TUSD administrators provided access to de-identified student data on courses taken, state standardized test scores, school services utilized (e.g., Gifted and Talented Education [GATE] programs), and basic demographic data (e.g., race, median income of the census block in which students resided). Using these data sources, we developed a student-level dataset for analysis. The sample consisted of TUSD student cohorts who would have graduated in the 2008, 2009, 2010, and 2011 cohorts (N = 26,022).

For example, for the 2008 cohort we have data beginning in the 2004–2005 academic year, when these students were freshmen. We ran analyses for all students (2008–2011) and also separately by cohort. These four cohorts were chosen because they provided the most complete student data as well as representing times when MAS participation peaked.

As MAS was offered to juniors and seniors, students who did not attend TUSD as juniors and seniors were excluded from analyses. Including students who did not reach junior or senior status in the analysis sample would lead to upward bias in the coefficients on MAS participation because those who reach junior and senior status generally have higher levels of educational achievement than students who dropped out as sophomores or freshmen. Additionally, we included only students who attended schools that offered MAS because students outside of these schools had no opportunity to participate in the program (n = 8,382). This approach has been critiqued as being unnecessarily restrictive (Stegeman, 2013), so we also conducted analyses that included participants at all TUSD schools (n = 16,917). The results presented in this study include both but are primarily focused on the analysis of MAS schools only.

Variables

Independent Variable of Interest

The independent variable of interest was a binary measure of student participation in the MAS program (see Table 1). A small number of freshmen and sophomores enrolled in MAS courses (n = 84, 1.0% of the sample), and these students were dropped from analyses. For the purposes of this study, we defined nonparticipants as all students attending schools offering MAS classes but who never took one of the courses. Students who enrolled in one or more MAS courses were defined as participants. MAS participants enrolled in anywhere from one to nine MAS courses, with students taking an average of three courses. There was considerable diversity in terms of the number of MAS classes students completed. Therefore, we ran two sets of analyses: one that sought to determine whether taking *any* MAS classes affected student achievement and a second that sought to determine whether the likelihood of student success changed as participation increased.

Dependent Variables

The conceptual underpinnings of the program presented previously argue that participation in MAS should positively affect academic achievement by changing student academic orientation, leading to greater engagement, and subsequently increasing performance on standard measures of academic success (see Figure 1). Within this context, we evaluated the

Table 1
Description and Measures for Variables Used in Regression Analyses

Dependent variables	
Graduate	Student graduated from high school at any point (1 = Yes; 0 = No)
Arizona's Instrument to Measure Standards (AIMS), writing	Student passed the high school AIMS writing test after initially failing (1 = Yes; 0 = No)
AIMS, reading	Student passed the high school AIMS reading test after initially failing (1 = Yes; 0 = No)
AIMS, math	Student passed the high school AIMS math test after initially failing (1 = Yes; 0 = No)
AIMS, all subjects	Student passed all the high school AIMS writing tests after initially failing at least one (1 = Yes; 0 = No)
Independent variables	
Gender	1 = Female; 0 = Male
African American	1 = Yes; 0 = No
Latina/o	1 = Yes; 0 = No
White	1 = Yes; 0 = No
Native American	1 = Yes; 0 = No
Asian American	1 = Yes; 0 = No
Free/reduced-price lunch	Participated in the Federal Meals program while enrolled in Tucson Unified School District (1 = Yes; 0 = No)
Census block median income	Median income of the census block in which the student resides (in thousands)
English language learner (ELL)	Student was at some point classified as ELL in high school (1 = Yes; 0 = No)
Gifted and Talented Education (GATE)	Student was at some point classified as GATE in high school (1 = Yes; 0 = No)
Special education (Special Ed.)	Student was at some point classified as Special Ed. in high school (1 = Yes; 0 = No)
Transfer	Number of times transferred school 9th and 10th grade
School attended: A	1 = Yes; 0 = No
School attended: B	1 = Yes; 0 = No
School attended: C	1 = Yes; 0 = No
School attended: D	1 = Yes; 0 = No
School attended: E	1 = Yes; 0 = No
School attended: F	1 = Yes; 0 = No
9th-grade GPA (weighted)	Range: 0.0–5.0
10th-grade GPA (weighted)	Range: 0.0–5.0
10th-grade AIMS: mathematics	Scaled score
10th-grade AIMS: reading	Scaled score
10th-grade AIMS: writing	Scaled score
Mexican American Studies (MAS)	**Student completed at least one semester credit of MAS (1 = Yes; 0 = No)**
MAS credits	**Number of MAS semesters a student completed (0 = 0; 1 = 1; 2 = 2; 3 = 3 or 4; 4 = 5 or more)**

Note. GPA = grade point average.

efficacy of MAS participation against two outcomes valued by Arizona policymakers: (1) a binary variable indicating whether a student passed the AIMS tests after initial failure and (2) a binary variable indicating whether a student

graduated from high school. All Arizona high school students are required to take the AIMS test in 10th grade as a graduation requirement. The test consists of subject components in math, reading, and writing. There is a science test as well, but it was not implemented until 2008 (Arizona Department of Education, 2011). As the majority of the students in the sample never took the test, we did not include it in the analysis. Students who fail any subject of the test must retake it in subsequent years. Because MAS enrollment was restricted to juniors and seniors, it was possible to analyze the relationship between MAS participation and AIMS performance after initial failure on the AIMS test; however, it was not possible to evaluate the relationship between MAS participation and AIMS performance for students who passed the AIMS in 10th grade because 10th graders were not yet eligible for MAS participation. Students who passed a subject test in 10th grade and later retook the test (e.g., to qualify for a Regents Scholarship) were excluded from analyses.

We created four dichotomous dependent variables for AIMS test passage defined as whether a student passed the AIMS test(s) s/he initially failed by senior year. This included the three subject tests as well as a variable for students who failed any of the AIMS tests initially and eventually passed all of them. We used a dichotomous measure of passing AIMS rather than a continuous measure of AIMS score because passing these tests is a prerequisite to graduation. The high school graduation dependent variable was a dichotomous measure of whether the student graduated from high school, including those who graduated with a high school diploma in 5 years (see Table 1 for measures and Table 2 for descriptive statistics). We hoped to also analyze the relationship between MAS participation and postsecondary enrollment; however, the data from the TUSD senior (self-report) survey had high levels of missing data, and the accuracy was questionable. Additionally, Pima Community College, the primary postsecondary destination for TUSD students, did not subscribe to the National Student Clearinghouse until 2012. Therefore, we could not conduct this analysis.

Control Variables

We attempted to include all covariates that affected the outcome variable of interest (i.e., AIMS passing or high school graduation) and were correlated with MAS participation. Measures of prior academic achievement satisfied both conditions of omitted variable bias because prior academic achievement affects future educational outcomes and prior academic achievement may be correlated with MAS participation. Academic achievement covariates were measured prior to junior year; otherwise variation in these measures could be caused by MAS participation. We therefore created measures of grade point average (GPA) in 9th grade and GPA in 10th grade using a "weighted" version of GPA that assigned higher grade values to advanced

Table 2
Descriptive Statistics by Cohort Group

	All Cohorts (n = 8,382)		2008 (n = 1,792)		2009 (n = 2,130)		2010 (n = 2,106)		2011 (n = 2,354)	
	MAS n = 1,707	Non-MAS n = 6,675	MAS n = 448	Non-MAS n = 1,344	MAS n = 408	Non-MAS n = 1,722	MAS n = 403	Non-MAS n = 1,703	MAS n = 448	Non-MAS n = 1,906
Dependent variables										
Graduate	82.2%***	73.8%***	88.4%***	72.5%***	82.4%***	72.9%***	82.4%*	77.2%*	75.9%	72.6%
AIMS writing (passed)	91.0%***	85.5%***	93.1%***	84.0%***	89.2%**	84.3%**	92.0%**	86.7%**	89.5%	86.8%
AIMS reading (passed)	90.5%***	85.2%***	93.0%***	82.6%***	88.0%*	84.2%*	89.3%	86.7%	91.3%**	86.7%**
AIMS math (passed)	83.3%***	78.0%***	89.5%***	78.2%***	84.8%**	78.2%**	81.3%	79.3%	77.5%	76.6%
AIMS passed all	78.7%***	74.0%***	84.3%***	73.2%***	77.6%	73.4%	78.1%	75.7%	74.3%	73.7%
Independent variables										
Gender (female)	54.5%***	46.8%***	55.8%**	44.7%**	51.5%	45.6%	58.1%**	48.0%**	52.9%	48.2%
African American	3.2%	8.7%	3.1%	7.9%	3.2%	8.2%	4.5%	7.7%	2.2%	10.7%
Latina/o	84.8%***	55.7%***	86.2%***	57.4%***	84.1%***	55.1%***	83.4%***	56.5%***	85.5%***	54.5%***
White	7.2%***	28.5%***	7.1%**	28.3%**	6.1%**	28.7%**	7.2%**	29.8%**	8.3%**	27.4%**
Native American	4.1%	3.9%	3.3%	4.2%	5.6%	4.4%	5.0%	3.2%	2.7%	3.8%
Asian American	0.6%	3.1%	0.2%	2.2%	1.0%	3.5%	0.0%	2.9%	1.3%	3.5%
Free/reduced-price lunch	76.6%***	65.5%***	69.0%***	57.8%***	76.2%***	62.4%***	75.7%***	65.1%***	85.5%***	74.1%***
Census block median income (mean)	$33,831***	$35,793***	$35,153	$36,054	$32,326***	$35,165***	$33,079**	$35,501**	$34,556*	$36,435*
ELL	14.9%***	7.8%***	20.8%**	9.7%**	13.2%	7.7%	11.7%	6.3%	13.4%	8.0%
GATE	20.9%	22.9%	21.4%	21.9%	19.4%	21.9%	17.4%	21.6%	24.8%	25.7%
Special education	10.1%**	19.0%**	9.8%	18.4%	10.0%	19.6%	10.9%	19.4%	9.6%	18.6%
Transfer (mean number of times)	0.09	0.09	0.08	0.08	0.07	0.08	0.08	0.11	0.13	0.10
School: A	8.4%*	15.2%*	8.7%*	19.3%*	10.8%	15.4%	8.9%	13.1%	5.6%	14.0%
School: B	24.5%***	16.8%***	13.4%*	22.9%*	35.3%***	14.3%***	27.3%**	16.9%**	23.2%*	14.7%*
School: C	1.1%	4.8%	—	—	—	—	—	—	3.1%	15.7%
School: D	17.9%	18.4%	38.6%***	15.4%***	10.5%	19.6%	8.7%*	20.1%*	12.3%	18.0%

(continued)

Table 2 **(continued)**

	All Cohorts (n = 8,382)		2008 (n = 1,792)		2009 (n = 2,130)		2010 (n = 2,106)		2011 (n = 2,354)	
	MAS n = 1,707	Non-MAS n = 6,675	MAS n = 448	Non-MAS n = 1,344	MAS n = 408	Non-MAS n = 1,722	MAS n = 403	Non-MAS n = 1,703	MAS n = 448	Non-MAS n = 1,906
School: E	10.8%	11.5%	—	—	10.0%	16.8%	14.9%	15.7%	17.6%*	10.3%*
School: F	37.3%*	33.3%*	37.7%	40.8%	33.3%	33.4%	39.7%	33.9%	38.2%**	27.3%**
9th-grade GPA	2.28***	2.44***	2.37	2.46	2.18**	2.36**	2.29**	2.45**	2.25***	2.48***
10th-grade GPA	2.14***	2.35***	2.20***	2.39***	2.05***	2.24***	2.15***	2.36***	2.15***	2.39***
10th-grade AIMS: math	689**	692**	690	690	686*	693*	688*	693*	692	694
10th-grade AIMS: reading	686***	694***	686*	691*	685**	693**	685**	694**	690*	695*
10th-grade AIMS: writing	684	685	678*	674*	687	689	686	687	686	688

Note. MAS = Mexican American Studies; AIMS = Arizona's Instrument to Measure Standards; ELL = English language learner; GATE = Gifted and Talented Education; GPA = grade point average. Dashes indicate data were unavailable for these schools during the specific year because MAS was not offered. Significance values reported for continuous variables utilized two-tailed t tests between MAS and non-MAS participants, while dichotomous variables were calculated using a two-sample test of proportions.
For all results, ***$p < .001$. **$p < .01$. *$p < .05$.

placement courses (e.g., A = 5, B = 4, etc.; see Table 1). Second, we created covariates of 10th grade AIMS test scores in math, reading, and writing. Third, we created measures of whether the student utilized GATE services in high school, was ever classified as a special education student, and was ever classified as an English language learner.

Measures of socioeconomic characteristics also satisfy the criteria for omitted variable bias. Prior research shows these characteristics have an effect on academic achievement (Aikens & Barbarin, 2008; Coley, 2002; Orr, 2003; Palardy, 2008), and it is reasonable to suggest that they may be correlated with MAS participation. For example, the MAS program participants tended to be from lower SES backgrounds than their peers (see Table 2). Our models include participation in the federal free/reduced-price lunch program and median household income in the census block where the student resides as proxies for socioeconomic status.

Our models also include demographic covariates, specifically race and gender. Race/ethnicity was correlated with MAS participation and may have an effect on educational achievement. Latina/o students, as expected, were more likely than any other race/ethnicity to enroll in MAS courses (see Table 2), but Latina/o students have lower academic achievement, on average, than White students (Gándara & Contreras, 2009). The opposite trend exists for gender. Females were more likely than males to participate in MAS (see Table 2), and prior research finds that young women have higher academic achievement, on average, than young men (Gándara & Contreras, 2009; Sáenz & Ponjuan, 2009). Finally, our models used indicator variables to identify which school the student attended. Prior research shows that school characteristics affect academic achievement (V. E. Lee & Bryk, 1989; Teddlie & Stringfield, 1993). Additionally, there was diversity in the size and scope of MAS programs within individual schools. Therefore, we controlled for school-level factors by including binary indicators for each school in TUSD while also using a measure of the number of times a student transferred. We used pseudonyms (Schools A–F) instead of school names. One limitation is that our study did not include measures of parents and peers, both of which can affect educational achievement (Rumberger, 2011). Unfortunately, administrative data do not include these measures.

Missing Data

A small number of students had missing data for 9th and 10th grade GPA as well as 10th grade AIMS tests. Results from a two-tailed *t* test showed that students with missing GPA data had significantly lower average AIMS test scores than students without missing data. Similarly, students with missing AIMS test scores had significantly lower GPAs than students without missing scores. Without imputing missing values for the GPA and 10th grade AIMS

test covariates, students with lower academic achievement would be disproportionately excluded.

We used different imputation strategies for GPA and 10th-grade AIMS scores. For GPA, we found that 9th-grade and 10th-grade GPAs were significantly correlated (r = .766), as were 10th- and 11th-grade GPAs (r = .770). Therefore, we began our imputation strategy by replacing missing GPA data with the subsequent year's data. For 9th-grade GPA, there was 14.7% missing data (n = 1,229), and 10th-grade GPA was missing 10.8% (n = 907). Using this method yielded a substantial decrease in the missing data (9th-grade GPA, n = 685, 8.2%; 10th-grade GPA, n = 28, 0.3%). For the remaining missing data we used the expectation-maximization algorithm within SPSS 21.0™. The expectation-maximization algorithm represents a general method for obtaining maximum likelihood estimates (Dempster, Laird, & Rubin, 1977, cited in Allison, 2002; McLachlan & Krishnan, 1997). While a multiple imputation method is generally preferred, single imputation is acceptable when the proportion of missing data is less than 10% (Schafer, 1999; Scheffer, 2002). This approach was the only one we used for missing AIMS data, and each of the AIMS tests met this criterion (math, n = 626, 7.5%; reading, n = 619, 7.4%; writing, n = 639, 7.6%). For the other variables, missing data were either not an issue or represented less than 0.3% of the observations for an individual variable.

Results

Characteristics of MAS and Non-MAS Students

To examine how the MAS students compared to non-MAS students, we cross-tabulated and conducted mean or two-sample proportion comparisons of all of the independent and dependent variables in the models (see Table 2). This revealed some important trends. First, and not surprisingly, Latinas/os were significantly more likely than non-Latinas/os to enroll in MAS courses, but they also represented over 55% of the non-MAS students—highlighting that schools offering these classes tended to have strong majority-Latina/o student bodies. In addition, MAS students tended to be from lower income backgrounds than their non-MAS peers. Across all four cohorts, MAS students lived in census blocks where the median income was significantly lower than that of their non-MAS peers. In addition, MAS students were *less* likely to be designated as special education students but *more* likely to be English language learners. Additionally, MAS students had significantly lower 9th- and 10th-grade GPAs than their non-MAS peers. The only exception to this trend was the 2008 cohort 9th-grade GPA where there was a difference, but it was not statistically significant. A similar trend existed for 10th-grade AIMS scaled scores. Across all tests and cohorts, non-MAS students tended to score higher, and the majority of these differences were statistically

significant. The exception was the 2008 cohort where the MAS students' math scores were equal to the non-MAS students' and the MAS students scored significantly higher on the writing test.

The measure of academic performance at the end of high school (AIMS passing and graduation) showed a different trend in which MAS students generally outperformed their non-MAS peers. In all five measures, MAS students had significantly higher rates of test passing and graduation. This is counterintuitive because significantly lower GPAs and standardized test scores early in a high school career generally correspond to lower levels of high school completion. At the very least, there is no reason to expect the achievement trends to reverse.

Logistic Regression Results

To more closely examine the role that MAS participation played in these outcomes, we computed a series of logistic regression analyses for all students and ran separate regression analyses disaggregated by cohort. The logistic regression approach allowed us to isolate the relationship between MAS participation and an outcome of interest (e.g., graduation) when controlling for the previously described covariates. The resulting average marginal effects (herein marginal effects) are easier to interpret than odds ratios and log-odds coefficients, as they documented the changes in likelihood that a specific outcome would occur as a result of MAS participation when controlling for the other covariates in the model.[3]

Table 3 shows logistic regression model results of the effect of participating in at least one MAS class on the probability of success in passing AIMS tests after initial failure and graduating. There are two different samples in Table 3: one that only includes schools offering MAS and the other including all TUSD schools (full regression models are available upon request). Table 3 shows that, for all cohorts combined, the marginal effect of participating in MAS on graduating was .095 ($p < .001$), meaning that participating in MAS increased the probability of graduation by 9.5% for the sample of all cohorts combined. For the 2008 cohort, participating in MAS increased the probability of graduation by 16.1% ($p < .001$). The marginal effects were smaller but still positive and significant for subsequent cohorts: 10.6% for the 2009 cohort ($p < .001$), for the 2010 cohort 6.6% ($p < .001$), and 7.0% for the 2011 cohort ($p < .001$).

Sample sizes were smaller for the AIMS test outcome variables because only students who initially failed that particular AIMS test were included in the analysis sample. For students who initially failed the AIMS reading test, participating in MAS increased the probability of subsequently passing the AIMS reading test by 9.3% for all cohorts ($p < .001$), by 17.9% for the 2008 cohort ($p < .001$), and by 6.2% for the 2010 cohort ($p < .01$) but did not significantly affect the probability of success for the 2009 and 2011

Table 3
Marginal Effect of Participating in Mexican American Studies (MAS)

	All Cohorts	2008–2009	2009–2010	2010–2011	2011–2012
Schools offering MAS classes					
Graduation	0.095***	0.161***	0.106***	0.066***	0.070***
	(0.008)	(0.026)	(0.016)	(0.018)	(0.020)
n	8,342	1,779	2,123	2,096	2,344
AIMS: reading	0.093***	0.179***	0.053	0.062***	0.095
	(0.017)	(0.023)	(0.037)	(0.016)	(0.052)
n	2,801	647	733	684	737
AIMS: writing	0.086***	0.141*	0.080**	0.092***	0.033
	(0.030)	(0.058)	(0.029)	(0.018)	(0.042)
n	2,950	743	691	782	734
AIMS: math	0.087***	0.153***	0.086*	0.070***	0.008
	(0.010)	(0.021)	(0.035)	(0.015)	(0.031)
n	3,263	737	895	792	839
AIMS: all tests	0.068***	0.104***	0.043*	0.071***	0.024
	(0.011)	(0.012)	(0.021)	(0.011)	(0.022)
n	4,384	1,031	1,101	1,115	1,137
All Tucson Unified School District schools					
Graduation	0.090***	0.138***	0.099***	0.067***	0.073***
	(0.008)	(0.017)	(0.015)	(0.017)	(0.015)
n	16,867	4,282	4,289	4,238	4,057
AIMS: reading	0.085***	0.151***	0.060	0.048**	0.084
	(0.018)	(0.025)	(0.034)	(0.017)	(0.044)
n	4,670	1,261	1,160	1,133	1,112
AIMS: writing	0.067*	0.111*	0.075**	0.065***	0.035
	(0.029)	(0.045)	(0.026)	(0.015)	(0.040)
n	5,015	1,513	1,092	1,316	1,067
AIMS: math	0.092***	0.146***	0.096**	0.068***	0.024
	(0.012)	(0.013)	(0.034)	(0.015)	(0.027)
n	5,644	1,510	1,489	1,362	1,268
AIMS: all tests	0.066***	0.092***	0.042*	0.065***	0.034
	(0.013)	(0.009)	(0.021)	(0.009)	(0.024)
n	7,569	2,123	1,837	1,915	1,679

Note. Cluster, robust standard errors are in parentheses.
***$p < .001$. **$p < .01$. *$p < .05$.

cohorts. For students who initially failed the AIMS math test, participating in MAS positively affected the probability of subsequently passing the AIMS math test by 8.7% for all cohorts ($p < .001$), 15.3% for the 2008 cohort ($p < .001$), by 8.6% for the 2009 cohort ($p < .05$), and by 7.0% for the 2010 cohort ($p < .001$) but did not significantly affect the probability of success

Table 4
Number of Mexican American Studies (MAS) Courses Taken in Schools Offering MAS, by Cohort

# MAS Courses	All Cohorts	2008–2009	2009–2010	2010–2011	2011–2012
0	6,676	1,343	1,722	1,703	1,908
1	371	188	68	49	66
2	601	108	171	146	176
3	97	7	40	27	23
4	313	50	66	106	91
5	73	32	15	11	15
6	103	11	20	32	40
7	28	10	3	9	6
8	81	30	18	13	20
9	2	0	0	0	2
Total	8,345	1,779	2,123	2,096	2,347

for the 2011 cohort. Model results for passing the AIMS writing test and passing all AIMS tests were similar to model results for passing the AIMS math test. Additionally, the sample that included all TUSD schools yielded very similar results to the models that included only students attending schools offering MAS.

As a supplemental analysis, we examined whether the effect of participating in MAS differed by the number of MAS courses taken. Table 4 tabulates the number of MAS courses taken by graduating cohort, for students attending schools where MAS was offered to their graduating cohort. For the 2008 cohort, 43% (188 out of 436) of students who participated in MAS took only one course, but in the 2009, 2010, and 2011 cohorts, most students took two or more. MAS courses were designed as two-semester sequences (Cammarota & Romero, 2014). Therefore, MAS participants were more likely to take two, four, six, or eight MAS courses, rather than one, three, five, or seven. We created aggregate categories for the independent variable, specifically, "three or four MAS classes" and "five or more MAS classes." We would have preferred to keep the groupings in two-course increments, but this option was not viable due to the small sample sizes for students who took more than six MAS courses. Table 5 shows marginal effects regarding the relationship between taking a specific number of MAS courses and the five outcomes of interest, relative to the reference group of students taking zero MAS courses. Consistent with our primary focus, these analyses were conducted only on students attending schools that offered MAS.

Table 5

Average Marginal Effect of Taking "n" Mexican American Studies (MAS) Classes, Relative to Taking *Zero* MAS Classes

Graduation	All Cohorts (n = 8,342)		2008–2009 (n = 1,779)		2009–2010 (n = 2,123)		2010–2011 (n = 2,096)		2011–2012 (n = 2,344)	
1 (0 = ref)	0.051	(0.036)	0.171***	(0.046)	–0.000	(0.037)	–0.035	(0.029)	–0.013	(0.061)
2 (0 = ref)	0.088***	(0.020)	0.139***	(0.020)	0.115***	(0.035)	0.045	(0.047)	0.070**	(0.023)
3–4 (0 = ref)	0.115***	(0.015)	0.098***	(0.005)	0.165***	(0.031)	0.119***	(0.017)	0.078**	(0.025)
5 or more (0 = ref)	0.159***	(0.016)	0.218***	(0.028)	0.135***	(0.008)	0.132**	(0.051)	0.146***	(0.029)
AIMS: Reading	All Cohorts (n = 2,801)		2008–2009 (n = 647)		2009–2010 (n = 733)		2010–2011 (n = 684)		2011–2012 (n = 737)	
1 (0 = ref)	0.064*	(0.029)	0.238***	(0.043)	0.026	(0.100)	–0.026	(0.041)	–0.116	(0.146)
2 (0 = ref)	0.073*	(0.032)	0.146***	(0.043)	0.029	(0.032)	0.050	(0.029)	0.119	(0.073)
3–4 (0 = ref)	0.115***	(0.028)	0.126	(0.066)	0.078	(0.100)	0.115***	(0.029)	0.110***	(0.027)
5 or more (0 = ref)	0.176***	(0.043)	0.173*	(0.078)	0.208**	(0.076)	0.124*	(0.057)	0.216***	(0.057)
AIMS: Writing	All Cohorts (n = 2,950)		2008–2009 (n = 743)		2009–2010 (n = 691)		2010–2011 (n = 782)		2011–2012 (n = 734)	
1 (0 = ref)	0.069	(0.045)	0.227***	(0.036)	0.007	(0.072)	–0.133**	(0.048)	–0.039	(0.141)
2 (0 = ref)	0.073*	(0.036)	0.046	(0.084)	0.076	(0.061)	0.126**	(0.045)	0.055	(0.050)
3–4 (0 = ref)	0.085*	(0.036)	0.043	(0.186)	0.160***	(0.036)	0.122**	(0.039)	0.025	(0.082)
5 or more (0 = ref)	0.170***	(0.015)	0.270***	(0.020)	0.045	(0.115)	0.264	(0.162)	0.076	(0.053)
AIMS: Math	All Cohorts (n = 3,263)		2008–2009 (n =737)		2009–2010 (n = 895)		2010–2011 (n = 792)		2011–2012 (n = 839)	
1 (0 = ref)	0.060	(0.047)	0.156**	(0.058)	–0.028	(0.058)	–0.046	(0.049)	–0.082	(0.105)
2 (0 = ref)	0.086***	(0.013)	0.133***	(0.023)	0.079	(0.069)	0.053	(0.042)	0.044	(0.083)
3–4 (0 = ref)	0.092***	(0.010)	0.150***	(0.031)	0.175***	(0.032)	0.139***	(0.028)	–0.066***	(0.020)
5 or more (0 = ref)	0.124***	(0.014)	0.193***	(0.053)	0.116**	(0.041)	0.060	(0.038)	0.114**	(0.035)
AIMS: All Tests	All Cohorts (n = 4,384)		2008–2009 (n = 1,031)		2009–2010 (n = 1,101)		2010–2011 (n = 1,115)		2011–2012 (n = 1,137)	
1 (0 = ref)	0.060	(0.037)	0.150**	(0.051)	–0.078	(0.042)	–0.037	(0.084)	–0.018	(0.117)
2 (0 = ref)	0.051**	(0.017)	0.073	(0.039)	0.055	(0.049)	0.067*	(0.027)	0.013	(0.050)
3–4 (0 = ref)	0.073***	(0.006)	0.034	(0.049)	0.090**	(0.032)	0.120***	(0.014)	0.004	(0.018)
5 or more (0 = ref)	0.112***	(0.015)	0.124*	(0.052)	0.095*	(0.039)	0.070*	(0.033)	0.105**	(0.038)

Note. ref = reference. Cluster, robust standard errors are in parentheses.
***$p < .001$. **$p < .01$. *$p < .05$.

For the 2008 cohort, taking one MAS course (compared to the reference group of zero) increased the probability of graduation by 17.1% ($p < .001$; see Table 5). The marginal effects for taking two MAS courses (13.9%, $p < .001$) and "three or four" MAS courses (9.8%, $p < .001$) were smaller in magnitude than the marginal effects of taking one MAS course, while the marginal effect of taking five or more MAS courses (21.8%, $p < .001$) was larger than the marginal effect of taking one MAS course. For subsequent cohorts the marginal effect of taking one MAS course was insignificant, in contrast to 2008 cohorts, and the marginal effects generally increased in magnitude as the number of MAS courses taken increased. A similar trend existed for AIMS passing after initial failure. The 2008 cohort tended to have the largest marginal effects stemming from taking one MAS course while the marginal effects on the other three cohorts tended to increase as the number of MAS courses increased. Finally, Appendix A shows results from models where one MAS course was the reference group. These results showed that taking more than one MAS course significantly increased the probability of graduation for the 2009, 2010, and 2011 cohorts. The results were not as pronounced for AIMS passing, but the general trend held.

Discussion

The estimated relationship between MAS participation and student educational attainment was surprisingly strong. Analyses from our initial report had not included covariates for prior academic achievement (Cabrera et al., 2012). We expected the estimated relationship to decline once these covariates were included, but it did not. Instead, the robustness of the coefficient on MAS participation was consistent with the descriptive statistics in Table 2. The MAS students had significantly *lower* 9th- and 10th-grade GPAs as well as 10th-grade AIMS scores than their non-MAS peers. However, they had significantly *higher* AIMS passing and graduation rates than their non-MAS peers, which seems counterintuitive. Decades of findings from education research would lead us to expect higher 9th- and 10th-grade GPAs and higher 10th-grade standardized test scores to be positively correlated with higher graduation rates (Alexander, Entwisle, & Horsey, 1997; Rumberger, 2011). Instead, we found the MAS students outperformed their non-MAS peers in terms of AIMS passing and graduation despite having 9th- and 10th-grade academic performances that were significantly lower (see Table 2). These results corroborate findings that ethnic studies can lead to increased student development (see, e.g., Astin, 1993; Bowman, 2009, 2010a, 2010b; Sleeter 2011). Furthermore, descriptive statistics in Table 2 do not support the claims of critics that MAS administrators selected the most academically capable students and that this accounted for increased AIMS passing and graduation rates (Stegeman, 2013). Instead, lower performing students took the MAS courses. Future studies should examine more closely whether this pedagogical approach effectively supports *higher performing*

students using traditional metrics. In the end, there was a selection bias in the sampling procedures, but it was in favor of *lower performing* students.

We utilized multiple modeling and sampling strategies throughout this programmatic assessment (previous analyses and current study included), and all of the results point to one conclusion: Taking MAS classes is consistently, significantly, and positively related to increased student academic achievement, and this relationship grows stronger the more classes students take. It did not matter how we operationalized academic success (i.e., graduation or one of three AIMS tests); if we ran models using all students in TUSD (see Table 3), only those in schools offering MAS (see Table 3), or a matched sample of students (Cabrera et al., 2013); or if the models utilized clustered, robust standard errors (current study), or omitted this component (Cabrera et al., 2013). The results remained the same, and the only significant shift occurred when we included controls for pre-MAS academic performance (current study), and as previously discussed, the relationships actually became stronger.

There was one cohort—2011—in which the association between MAS participation with outcomes was not as pronounced, and this was consistent with the previous analyses (Cabrera et al., 2012). These results seem confusing when analyzing the program in isolation. With a similar number of students served, and the same pedagogical approach employed, why would one cohort show a decline in the impact of MAS? Prior research finds that effect sizes decline when additional sites adopt a program because fidelity of implementation is lower in new locales (Glennan, Bodilly, Galegher, & Kerr, 2004). There is some evidence to support this claim as there were two more schools offering MAS courses in the 2011 cohort than in the 2008 one; however, the number of students served was the same in both cohorts, 446.

Another explanation involves the increasing political scrutiny of the MAS program. The Arizona legislature passed HB 2281 in May of 2010, and in December of that year, Superintendent Tom Horne (2010) found TUSD out of compliance with the statute. Early in 2011 several community protests occurred within TUSD over the potential elimination of MAS, including the dramatic student takeover of the school board on April 26 (Cabrera et al., 2013). The intense political turmoil of the time may have contributed to the decline in the impact of MAS on academic achievement because the turmoil that students, families, and the school district experienced likely distracted from the day-to-day rhythm of classroom life.

Despite the weaker results from the 2011 cohort, the overall analyses strongly support that participation in MAS was positively related to increased academic achievement, and this generally increased the more classes students completed. This result is critically important because TUSD is under a federal desegregation order, in part because of the educational disparities between Latina/o and White students. These analyses show that compared to non-MAS students, MAS participants were more likely to be low-income Latinas/os with low levels of academic performance prior to taking MAS

courses. Future research needs to assess whether the elimination of the program exacerbates existing inequalities. Additionally, these analyses pose larger questions: To what degree can the MAS program be scaled up throughout the district? Can it be adapted to different locales that are facing similar achievement gaps? If so, will local districts be open to incorporating critical theorists such as Freire into their curricula?

The results also provide some guidance for those adopting a MAS approach to education. First, while one course was important, the most demonstrable impacts stemmed from taking multiple courses. Therefore, those creating a program need to be intentional, coordinating efforts to offer more than simply one "diversity" course. This requires a large-scale, organized, collective effort. Some might argue that this is untenable, but here, a historical perspective is warranted. The MAS program started very small and gradually expanded with the expansion of both student interest and the availability of teachers trained in CCI. The current analyses were conducted at the peak of student program participation. Thus, the successes documented stem from sustained effort over the course of a decade (Cammarota & Romero, 2014). Like all K-12 improvement efforts, programs such as MAS need to be designed, implemented, and brought to scale with care and diligence.

Additionally, our findings raise questions regarding which elements of the MAS program enhance student achievement. Is it the process of *conscientização* (Freire, 2000, 2008)? Is it authentic caring (Valenzuela, 1999) and valuing funds of knowledge (González et al., 2005)? Or are the creators of the program correct that the individual components of the program cannot be separated and must function holistically to be maximize their effectiveness (Cammarota & Romero, 2014)? We do not have the necessary variables in the data provided by TUSD to explore these questions, and because the classes were eliminated on January 10, 2012, we cannot collect the data necessary to answer them.

This research has several implications for education research and policy. The proportion of Latinas/os in Arizona's public education system is rising dramatically (Milem, Bryan, Sesate, & Montaño, 2013), as is true throughout the country (Gándara & Contreras, 2009). There are, additionally, persistent gaps in educational achievement between Latina/o and White middle-class students (Gándara & Contreras, 2009; Milem et al., 2013). Current approaches to educating Latinas/os have not ameliorated these gaps, and therefore new approaches to education are required to address this persistent issue (Gándara & Contreras, 2009). MAS represents one option that meets the state superintendent's requirement for investing in educational innovation with an empirically supported record of success (Huppenthal, n.d.). Currently, there are few approaches to educating Latina/o students that hold as much promise, but racial politics continue to overshadow a needed focus on student achievement. The opponents of the program have yet to offer an alternative to MAS that is as thoroughly assessed and

proven. This is a critically important point because removing this program could potentially harm the most academically vulnerable students (i.e., those students whom the MAS program tended to serve). Given the results of this study and the absence of a viable replacement, the needed discussion is how to replicate and expand the successes of this program beyond Tucson. Nationwide, there are constant discussions of educational inequality and the need to turn around "low-performing schools" while "rewarding excellence" (U.S. Department of Education, 2010). However, critical ethnic studies is not included in the proposed solutions. If results matter, then ethnic studies needs to be considered part of "real education" and reform on a national level.

Additionally, the results of this research suggest that taking MAS classes fits within the program's larger professed goals of engaging in liberatory education (Cammarota & Romero, 2014). There appears to be a tension given the current analysis's focus on passing standardized tests and graduating high school, as these tend to represent a repressive paradigm that blames the oppressed for their marginalized social position (Duncan-Andrade & Morrell, 2008). However, the founders, supporters, and maintainers of the program intentionally included traditional measures of academic achievement as part of their liberatory paradigm. While critical educators frequently deride the oppressive nature and overuse of standardized tests (Cammarota & Romero, 2014; Delpit, 2012), these tests are still pragmatic realities in the lives of students. As Duncan-Andrade and Morrell (2008) argue, "The standards are the gatekeeper that stands between [students] and their futures" (p. 160). This fits within Duncan-Andrade and Morrell's (2008) reframing of critical pedagogy whereby teachers frequently believe they must "choose between academically rigorous teaching and teaching for social justice. This is a false binary" (p. 180). In their understanding, academic rigor and social critique are mutually complementary goals. This allows students to continually hone their critical perspectives as they gain academic tools that aid in their social critique (Cammarota & Romero, 2014).

Duncan-Andrade and Morrell (2008) further argue that the educational system is created to maintain racial and economic inequality. Therefore, "raising individual academic performance among students attending urban schools is itself a revolutionary act" (Duncan-Andrade & Morrell, 2008, p. 189). Thus, MAS as a tool for improved student achievement, especially among low-income Latinas/os, serves as a counterhegemonic means of disrupting systemic inequality (Cammarota & Romero, 2014). Within this context, Duncan-Andrade and Morrell argue that standardized tests are indefensible and harmful, yet they still assert the following:

> Critical pedagogy is the best approach to test preparation in that the students are developing the important skills that will allow them to perform on tests as they also develop the language to critique the structure and nature of the tests that they must take if they are to make it successfully through the K-12 system. (p. 157)

This pushes against the foundations of another critical education perspective: CRT. A central component of CRT is a rejection of objective truth and meritocracy, as they are viewed as camouflaging oppressive social practices (Delgado & Stefancic, 2001). In contrast, the current analysis demonstrates that students taking MAS courses outperform their peers who are not in the program; thus, these students would be labeled meritorious. Currently, CRT does not have a method for analyzing marginalized student success; instead, the focus tends to be on how these students are systematically disadvantaged. This suggests that CRT in education needs to develop an additional vein of research examining practices that effectively disrupt systemic oppression.

Conclusion

In conducting this study we sought to heed the call of leaders in our field who have encouraged educational scholars to conduct empirical studies that are policy relevant—to do work "that really matters." In so doing, we have provided empirical evidence regarding the positive impact of MAS courses on students' academic achievement. Our hope is that that policy makers will use these findings as a source of information in constructing wise, informed, and actionable policy. There are, of course, many other inputs to policy besides research. Berkman and Plutzer (2005) include three sources of input to school finance policies: political institutions, citizen preference, and organized interests. Research findings are most appropriately included in the category of organized interests, and a key challenge arises in doing policy-relevant scholarship. The work may not "matter" to policy actors who are influenced by ideological commitments, political agendas, or special interest group membership. Decisions might not appear to be driven by a desire to provide opportunities that enhance student learning, yet researchers should not be surprised that the rough and tumble of the policy process does not elevate their findings to the top tier of influence. Instead, the challenge becomes trying to push policy actors to care about empirical analysis or work with ones for whom it does matter.

Thus, these findings may play an important role in improving student learning and development within TUSD as Special Master Hawley prioritized empirical analyses over ideological commitments. Our findings establish that taking MAS courses corresponded to a significant, increased likelihood that students would pass the AIMS tests and graduate from high school. Based on the findings of our earlier study, the approved USP included the following provision: "By the beginning of the 2013–2014 school year, the District shall develop and implement culturally relevant courses of instruction designed to reflect the history, experiences, and culture of African American and Mexican American communities." In so doing, an agenda for the next round of publicly engaged scholarship has been set.

Appendix A

Average Marginal Effect of Taking "n" Mexican American Studies (MAS) Classes, Relative to Taking *One* MAS Class

Graduation	All Cohorts (n = 8,342)		2008 (n = 1,779)		2009 (n = 2,123)		2010 (n = 2,096)		2011 (n = 2,344)	
0 (1 = ref)	–0.051	(0.036)	–0.171***	(0.046)	0.000	(0.037)	0.035	(0.029)	0.013	(0.061)
2 (1 = ref)	0.037	(0.040)	–0.032	(0.053)	0.115*	(0.045)	0.079*	(0.038)	0.084	(0.043)
3–4 (1 = ref)	0.064	(0.043)	–0.073	(0.045)	0.165*	(0.067)	0.154***	(0.018)	0.091	(0.081)
5 or more (1 = ref)	0.108*	(0.045)	0.048	(0.040)	0.135**	(0.044)	0.166**	(0.057)	0.159**	(0.051)
AIMS: Reading	All Cohorts (n = 2,801)		2008 (n = 647)		2009 (n = 733)		2010 (n = 684)		2011 (n = 737)	
0 (1 = ref)	–0.064*	(0.029)	–0.238***	(0.043)	–0.026	(0.100)	0.026	(0.041)	0.116	(0.146)
2 (1 = ref)	0.009	(0.020)	–0.092	(0.079)	0.004	(0.103)	0.077	(0.064)	0.235	(0.122)
3–4 (1 = ref)	0.051	(0.043)	–0.112	(0.081)	0.052	(0.138)	0.141**	(0.049)	0.225	(0.147)
5 or more (1 = ref)	0.113	(0.062)	–0.065	(0.070)	0.183	(0.127)	0.150*	(0.075)	0.332*	(0.157)
AIMS: Writing	All cohorts (n = 2,950)		2008 (n = 743)		2009 (n = 691)		2010 (n = 782)		2011 (n = 734)	
0 (1 = ref)	–0.069	(0.045)	–0.227***	(0.036)	–0.007	(0.072)	0.133**	(0.048)	0.039	(0.141)
2 (1 = ref)	0.004	(0.034)	–0.182	(0.101)	0.069	(0.071)	0.259***	(0.052)	0.093	(0.130)
3–4 (1 = ref)	0.016	(0.061)	–0.184	(0.182)	0.153	(0.105)	0.255***	(0.028)	0.064	(0.193)
5 or more (1 = ref)	0.101	(0.053)	0.043	(0.046)	0.038	(0.179)	0.397**	(0.148)	0.115	(0.144)
AIMS: Math	All Cohorts (n = 3,263)		2008 (n = 737)		2009 (n = 895)		2010 (n = 792)		2011 (n = 839)	
0 (1 = ref)	–0.060	(0.047)	–0.156**	(0.058)	0.028	(0.058)	0.046	(0.049)	0.082	(0.105)
2 (1 = ref)	0.026	(0.059)	–0.023	(0.055)	0.108	(0.102)	0.100	(0.065)	0.126	(0.140)
3–4 (1 = ref)	0.032	(0.048)	–0.006	(0.080)	0.204***	(0.055)	0.185**	(0.068)	0.016	(0.122)
5 or more (1 = ref)	0.064	(0.054)	0.037	(0.082)	0.144	(0.076)	0.107	(0.076)	0.196	(0.113)
AIMS: All Tests	All Cohorts (n = 4,384)		2008 (n = 1,031)		2009 (n = 1,101)		2010 (n = 1,115)		2011 (n = 1,137)	
0 (1 = ref)	–0.060	(0.037)	–0.150**	(0.051)	0.078	(0.042)	0.037	(0.084)	0.018	(0.117)
2 (1 = ref)	–0.009	(0.045)	–0.077	(0.077)	0.133	(0.070)	0.104	(0.093)	0.031	(0.140)
3–4 (1 = ref)	0.013	(0.036)	–0.116	(0.072)	0.168**	(0.064)	0.157	(0.088)	0.022	(0.119)
5 or more (1 = ref)	0.052	(0.036)	–0.025	(0.072)	0.173**	(0.065)	0.107	(0.066)	0.122	(0.116)

Note. ref = reference. Cluster, robust standard errors are in parentheses.
***$p < .001$. **$p < .01$. *$p < .05$.

Notes

A previous iteration of this paper was presented at an invited Division G, Vice Presidential Session of the annual meeting of the American Educational Research Association, 2013, San Francisco, California. We would like to thank Dr. Patricia Gándara and Andrew R. Blatter for their comments on earlier version of the manuscript.

[1]By the time Mexican American Studies (MAS) was officially discontinued, former state superintendent Tom Horne had been elected Arizona attorney general, and a new superintendent, John Huppenthal, had been elected.

[2]Propensity score matching (PSM) creates comparison groups that attempt to replicate the counterfactual for each treated observation. Each treated observation is matched to a nontreated observation that has identical values for all other variables that affect the outcome and have a systematic relationship with programmatic participation. However, PSM is sensitive to the assumption of selection on observables (Guo & Fraser, 2010), assuming that there are no omitted variables that affect the outcome and have a systematic relationship with programmatic participation. Analyses by Smith and Todd (2005) showed that matching estimators perform poorly when researchers lack appropriate control variables. PSM is appropriate when researchers have rich survey data that measure factors conceivably relevant to program participation but is less appropriate for the present study, which is based on administrative data. Therefore, we ran logistic regressions models and acknowledged the potential presence of omitted variable bias as a limitation rather than run PSM models.

[3]Average marginal effects (AMEs) are calculated as follows: For each observation, calculate the predicted probability of success when X = 1; calculate the predicted probability of success when X = 0; calculate the difference between these two probabilities, which is the marginal effect of MAS for each observation; and calculate the mean value of these individual marginal effects, which is the AME. AMEs are more desirable than "discrete change" marginal effects because AMEs are calculated using the actual covariate values of each observation rather than assigning arbitrary covariate values to each observation (Mitchell, 2012).

References

Acuña, R. (2012, November 15). The vindication of Mexican American Studies. *Counterpunch*. Retrieved from http://www.counterpunch.org/2012/11/15/the-vindication-of-mexican-american-studies/

Aikens, N. L., & Barbarin, O. (2008). Socioeconomic differences in reading trajectories: The contribution of family, neighborhood, and school contexts. *Journal of Educational Psychology*, *100*, 235–251.

Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, *70*(2), 87–107.

Allison, P. D. (2002). *Missing data*. Thousand Oaks, CA: Sage.

American Educational Research Association. (2012a, February 5). *AERA resolution regarding the repeal of Arizona HB2281*. Washington, DC: Author.

American Educational Research Association. (2012b, February 5). *AERA resolution regarding the teaching of Mexican American Studies*. Washington, DC: Author.

Angrist, J. D., & Lavy, V. (1999). Using Maimonides' rule to estimate the effect of class size on scholastic achievement. *Quarterly Journal of Economics*, *114*(2), 533–575.

Angrist, J. D., & Pischke, J.-S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton, NJ: Princeton University Press.

antonio, a. l. (2001). Diversity and the influence of friendship groups in college. *Review of Higher Education*, *25*(1), 63–89.

Arizona Department of Education. (2011). *Guide to test interpretation: AIMS and Stanford 10*. Phoenix, AZ: Author.

Astin, A. W. (1993). Diversity and multiculturalism on the campus: How are students affected? *Change: The Magazine of Higher Learning*, *25*(2), 44–49.

Bean, T. W., Valerio, P. C., Senior, H. M., & White, F. (1999). Engagement in reading and writing about a multicultural novel. *Journal of Educational Research*, *93*(1), 32–37.

Berkman, M. B., & Plutzer, E. (2005). *Ten thousand democracies: Politics and public opinion in America's school districts*. Washington, DC: Georgetown University Press.

Bowman, N. A. (2009). College diversity courses and cognitive development among students from privileged and marginalized groups. *Journal of Diversity in Higher Education*, *2*(3), 182.

Bowman, N. A. (2010a). College diversity experiences and cognitive development: A meta-analysis. *Review of Educational Research*, *80*(1), 4–33.

Bowman, N. A. (2010b). Disequilibrium and resolution: The nonlinear effects of diversity courses on well-being and orientations toward diversity. *Review of Higher Education*, *33*(4), 543–568.

Brozo, W. G., & Valerio, P. C. (1996). A walk through Gracie's garden: Literacy and cultural explorations in a Mexican American junior high school. *Journal of Adolescent and Adult Literacy*, *40*(3), 164–170.

Cabrera, N. L. (2012). *Empirical analysis of Tucson Unified School District's Mexican American Studies Department, 2010 graduating cohort*. Tucson, AZ: Report to Special Master Dr. Willis D. Hawley on the Tucson Unified School District Desegregation Case.

Cabrera, N. L., Meza, E. L., Romero, A. J., & Rodriguez, R. (2013). "If there is no struggle, there is no progress": Transformative youth resistance and the school of ethnic studies. *Urban Review*, *45*(1), 7–22.

Cabrera, N. L., Milem, J. F., & Marx, R. W. (2012). *An empirical analysis of the effects of Mexican American Studies participation on student achievement within Tucson Unified School District*. Tucson, AZ: Report to Special Master Dr. Willis D. Hawley on the Tucson Unified School District Desegregation Case.

Cammarota, J. (2007). A social justice approach to achievement: Guiding Latina/o students toward educational attainment with a challenging, socially relevant curriculum. *Equity and Excellence in Education*, *40*(1), 87–96.

Cammarota, J., & Romero, A. (2006a). A Critically Compassionate Intellectualism for Latina/o students: Raising voices above the silencing in our schools. *Multicultural Education*, *14*(2), 16–23.

Cammarota, J., & Romero, A. (2006b). A critically compassionate pedagogy for Latino youth. *Latino Studies*, *4*(3), 305–312.

Cammarota, J., & Romero, A. (2009). The Social Justice Education Project: A Critically Compassionate Intellectualism for Chicana/o students. In W. Ayers, T. Quinn, & D. Stovall (Eds.), *Handbook for social justice education* (pp. 465-476). New York, NY: Routledge.

Cammarota, J., & Romero, A. (2014). *Raza studies: The public option for educational revolution*. Tucson: University of Arizona Press.

Cappellucci, D. F., Williams, C., Hernandez, J. J., Nelson, L. P., Casteel, T., Gilzean, G., & Gershon, F. (2011). *Curriculum audit of the Mexican American Studies Department, Tucson Unified School District*. Miami Lakes, FL: Cambium Learning.

Carter, D. (2008). Achievement as resistance: Development of a critical race achievement ideology among Black achievers. *Harvard Educational Review*, *78*(3), 466–497.

Chang, M. J. (2002). The impact of an undergraduate diversity course requirement on students' racial views and attitudes. *Journal of General Education*, *51*(1), 21–42.

Coley, R. J. (2002). *An uneven start: Indicators of inequality in school readiness*. Princeton, NJ: Educational Testing Service.

Copenhaver, J. (2001). Listening to their voices connect literary and cultural understandings: Responses to small group read-alouds of *Malcolm X: A Fire*. *New Advocate*, *14*(4), 343–359.

Delgado, R., & Stefancic, J. (2001). *Critical race theory: An introduction*. New York, NY: NYU Press.

Delpit, L. (2012). *"Multiplication is for white people": Raising expectations for other people's children*. New York, NY: New Press.

Denson, N., & Chang, M. J. (2009). Racial diversity matters: The impact of diversity-related student engagement and institutional context. *American Educational Research Journal*, *46*(2), 322–353.

Department of Accountability and Research. (2011a, January 6). *AIMS achievement comparison for students taking one or more ethnic studies classes: Initial passing rate versus cumulative passing rate by AIMS subject and cohort year*. Tucson, AZ: Tucson Unified School District.

Department of Accountability and Research. (2011b, January 6). *Selected statistics—2010 (four year) graduation cohort*. Tucson, AZ: Tucson Unified School District.

DesJardins, S. L. (2005). *Investigating the efficacy of using selection modeling in research of the Gates Millennium Scholars program*. Washington, DC: Gates Millennium Scholars Research Advisory Council.

Duncan-Andrade, J. M. R., & Morrell, E. (2008). *The art of critical pedagogy: Possibilities from moving theory to practice in urban schools*. New York, NY: Peter Lang.

Engberg, M. E. (2004). Improving intergroup relations in higher education: A critical examination of the influence of educational interventions on racial bias. *Review of Educational Research*, *74*(4), 473–524.

Franciosi, R. (2009). *The effect of Tucson Unified ethnic ("Raza") studies on student achievement*. Phoenix: Arizona Department of Education.

Freire, P. (2000). *Pedagogy of the oppressed* (30th anniversary ed.). New York, NY: Herder and Herder.

Freire, P. (2008). *Education for a critical consciousness*. New York, NY: Continuum.

Freire, P., & Macedo, D. (1987). *Literacy: Reading the word and the world*. Westport, CT: Bergin & Garvey.

Gándara, P., & Contreras, F. (2009). *The Latino education crisis: The consequences of failed social policies*. Cambridge, MA: Harvard University Press.

Glennan, T. K., Jr., Bodilly, S. J., Galegher, J. R., & Kerr, K. A. (2004). *Expanding the research of educational reforms: Perspectives from leaders in the scale-up of educational interventions*. Santa Monica, CA: RAND.

González, N., Moll, L., & Amanti, C. (2005). *Funds of knowledge: Theorizing practices in households, communities, and classrooms*. Hillsdale, NJ: Lawrence Erlbaum.

Guo, S., & Fraser, M. W. (2010). *Propensity score analysis: Statistical methods and applications*. Thousand Oaks, CA: Sage.

Gurin, P., Dey, E. L., Hurtado, S., & Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes. *Harvard Educational Review*, *72*(3), 330–367.

Herreras, M. (2012, November 13). Want more evidence that Mexican-American studies works? *Tucson Weekly*. Retrieved from http://www.tucsonweekly.com/TheRange/archives/2012/11/12/want-more-evidence-that-mexican-american-studies-works

Horne, T. (2010). *Findings by the state superintendent of public instruction of violation by Tucson Unified School District pursuant to A.R.S.§15-112(B)*. Phoenix: State of Arizona Department of Education.

Hoxby, C. M. (2000). The effects of class size on student achievement: New evidence from population variation. *Quarterly Journal of Economics*, *115*(4), 1239–1285.

Hu-DeHart, E. (1993). The history, development, and future of ethnic studies. *Phi Delta Kappan*, *75*(1), 50–54.

Huicochea, A. (2011a, March 15). Ethnic studies claims in question. *Arizona Daily Star*. Retrieved from http://azstarnet.com/news/local/education/ethnic-studies-claim-in-question/article_c316a3d0-7ff5-5f87-874e-6b7cf3b515f3.html

Huicochea, A. (2011b, June 23). TUSD to appeal Huppenthal's decision on ethnic studies. *Arizona Daily Star*. Retrieved from http://azstarnet.com/article_ebe8a50c-9de0-11e0-8423-001cc4c002e0.html

Huppenthal, J. (n.d.). *A message from the superintendent*. Retrieved from http://www.azed.gov/superintendent/

Huppenthal, J. (2011). *Superintendent of Public Instruction John Huppenthal statement of finding regarding Tucson Unified School District's violations of A.R.S.§15-112*. Phoenix: State of Arizona Department of Education.

Hurtado, S., Dey, E. L., Gurin, P. Y., & Gurin, G. (2003). College environments, diversity, and student learning. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (pp. 145–189). Dordrecht, the Netherlands: Springer.

Johnson, S. M., & Lollar, X. L. (2002). Diversity policy in higher education: The impact of college students' exposure to diversity on cultural awareness and political participation. *Journal of Education Policy*, *17*(3), 305–320.

Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2010). *Handbook on impact evaluation: Quantitative methods and practices*. Washington, DC: World Bank.

Krater, J., & Zeni, J. (1995). Seeing students, seeing culture, seeing ourselves. *Voices From the Middle*, *3*(3), 32–38.

Krater, J., Zeni, J., & Cason, N. D. (1994). *Mirror images: Teaching writing in black and white*. Portsmouth, NH: Heinemann.

Laird, T. F. N. (2005). College students' experiences with diversity and their effects on academic self-confidence, social agency, and disposition toward critical thinking. *Research in Higher Education*, *46*(4), 365–387.

Laird, T. F. N., Engberg, M. E., & Hurtado, S. (2005). Modeling accentuation effects: Enrolling in a diversity course and the importance of social action engagement. *Journal of Higher Education*, *76*(4), 448–476.

Lee, C. D. (1995). A culturally based cognitive apprenticeship: Teaching African American high school students skills in literary interpretation. *Reading Research Quarterly*, *30*(4), 608–630.

Lee, C. D. (2001). Is October Brown Chinese? A cultural modeling activity system for underachieving students. *American Educational Research Journal*, *38*(1), 97–142.

Lee, C. D. (2006). "Every good-bye ain't gone": Analyzing the cultural underpinnings of classroom talk. *International Journal of Qualitative Studies in Education*, *19*(3), 305–327.

Lee, C. D. (2007). *Culture, literacy and learning*. New York, NY: Teachers College Press.

Lee, V. E., & Bryk, A. S. (1989). A multilevel model of the social distribution of high school achievement. *Sociology of Education*, *62*(3), 172–192.

Lewis, K. M., Sullivan, C. M., & Bybee, D. (2006). An experimental evaluation of a school-based emancipatory intervention to promote African American well-being and youth leadership. *Journal of Black Psychology*, *32*(1), 3–28.

Lipka, J. (1991). Toward a culturally based pedagogy: A case study of one Yup'ik Eskimo teacher. *Anthropology and Education Quarterly*, *22*(3), 203–223.

Lipka, J., Hogan, M. P., Webster, J. P., Yanez, E., Adams, B., Clark, S., & Lacy, D. (2005). Math in a cultural context: Two case studies of a successful culturally-based math project. *Anthropology and Education Quarterly*, *36*(4), 367–385.

Lipka, J., Sharp, N., Brenner, B., Yanez, E., & Sharp, F. (2005). The relevance of culturally based curriculum and instruction: The case of Nancy Sharp. *Journal of American Indian Education*, *44*(3), 31–54.

Lomawaima, K. T., & McCarty, T. L. (2006). *"To remain an Indian": Lessons in democracy from a century of Native American education*. New York, NY: Teachers College Press.

MacEachern, D. (2012, December 15). Insidious Latino studies being revived at Tucson schools. *Arizona Republic*. Retrieved from http://www.azcentral.com/arizonarepublic/viewpoints/articles/20121215insidious-latino-studies-being-revived-tucson-schools.html

MacEachern, D. (2013, February 9). Bit of leftist engineering in Tucson expensive. *Arizona Republic*. Retrieved from http://www.azcentral.com/opinions/articles/20130209bit-of-leftist-engineering-in-tucson-expensive.html

Martinez, M. (2011, January 5). Arizona education chief moves to ban ethnic studies in Tucson schools. *CNN*. Retrieved from http://edition.cnn.com/2011/US/01/04/arizona.ethnic.studies.ban/

Matthews, C. E., & Smith, W. S. (1994). Native American related materials in elementary science instruction. *Journal of Research in Science Teaching*, *31*(4), 363–380.

Maxwell, L. A. (2012, November 12). Ethnic studies could return to Tucson in desegregation plan. *Education Week*. Retrieved from http://blogs.edweek.org/edweek/learning-the-language/2012/11/ethnic_studies_could_return_to.html

McCarty, T. L. (1993). Language, literacy, and the image of the child in American Indian classrooms. *Language Arts*, *70*(3), 182–192.

McLachlan, G. J., & Krishnan, T. (1997). *The EM algorithm and extensions*. New York, NY: Wiley.

Milem, J. F. (1994). College, students, and racial understanding. *Thought and Action*, *9*(2), 51–92.

Milem, J. F., Bryan, W. P, Sesate, D. B., & Montaño, S. (2013). *Arizona minority student progress report, 2013*. Phoenix: Arizona Minority Education Policy Analysis Center.

Milem, J. F., & Umbach, P. D. (2003). The influence of precollege factors on students' predispositions regarding diversity activities in college. *Journal of College Student Development*, *44*(5), 611–624.

Milem, J. F., Umbach, P. D., & Liang, C. T. (2004). Exploring the perpetuation hypothesis: The role of colleges and universities in desegregating society. *Journal of College Student Development*, *45*(6), 688–700.

Mitchell, M. N. (2012). *Interpreting and visualizing regression models using Stata*. College Station, TX: Stata Press.

O'Connor, C. (1997). Dispositions toward (collective) struggle and educational resilience in the inner city: A case analysis of six African American high school students. *American Educational Research Journal*, *34*(4), 593–629.

Orr, A. J. (2003). Black-White differences in achievement: The importance of wealth. *Sociology of Education*, *76*, 281–304.

Palardy, G. J. (2008). Differential school effects among low, middle, and high social class composition schools: A multiple group, multilevel latent growth curve analysis. *School Effectiveness and School Improvement*, *19*, 21–49.

Pascarella, E. T., Edison, M., Nora, A., Hagedorn, L. S., & Terenzini, P. T. (1996). Influences on students' openness to diversity and challenge in the first year of college. *Journal of Higher Education*, *67*, 174–195.

Prohibited courses and classes, enforcement, Arizona Revised Statute § 15-112. (2010). Retrieved from http://www.azleg.gov/FormatDocument.asp?inDoc=/ars/15/00112.htm&Title=15&DocType=ARS

Rickford, A. (2001). The effect of cultural congruence and higher order questioning on the reading enjoyment and comprehension of ethnic minority students. *Journal of Education for Students Placed at Risk*, *6*(4), 357–387.

Rojas, F. (2006). Social movement tactics, organizational change and the spread of African-American studies. *Social Forces*, *84*(4), 2147–2166.

Romero, A., Arce, S., & Cammarota, J. (2009). A barrio pedagogy: Identity, intellectualism, activism, and academic achievement through the evolution of critically compassionate intellectualism. *Race Ethnicity and Education*, *12*(2), 217–233.

Romero, A. F. (2008). *Towards a critically compassionate intellectualism model of transformative education: Love, hope, identity, and organic intellectualism through the convergence of critical race theory, critical pedagogy, and authentic caring*. Unpublished doctoral dissertation, University of Arizona.

Rumberger, R. W. (2011). *Dropping out: Why students drop out of high school and what can be done about it*. Cambridge, MA: Harvard University Press.

Sáenz, V. B., & Ponjuan, L. (2009). The vanishing Latino male in higher education. *Journal of Hispanic Higher Education*, *8*(1), 54–89.

Save Ethnic Studies. (2011). Analysis and evaluation of Mexican American studies. *Tucson, AZ: Author*. Retrieved from http://saveethnicstudies.org/

Schafer, J. L. (1999). Multiple imputations: A primer. *Statistical Methods in Medical Research*, *8*, 3–15.

Scheffer, J. (2002). Dealing with missing data. *Research Letters in the Information and Mathematical Sciences*, *3*, 153–160.

Sleeter, C. E. (2011). *The academic and social value of ethnic studies: A research review*. Washington, DC: National Education Association.

Smith, J. A., & Todd, P. E. (2005). Does matching overcome LaLonde's critique of nonexperimental estimators? *Journal of Econometrics*, *125*(1/2), 305–353.

Stegeman, M. (2013, January). *January constituent letter*. Retrieved from stegeman4tusd.com

Stock, J. H., & Watson, M. W. (2011). *Introduction to econometrics* (3rd ed.). Boston, MA: Addison-Wesley.

Takaki, R. (1993). *A different mirror: A history of multicultural America*. Boston, MA: Back Bay Books.

Teddlie, C., & Stringfield, S. (1993). *Schools make a difference: Lessons learned from a 10-year study of school effects*. New York, NY: Teachers College Press.

Tsui, L. (1999). Courses and instruction affecting critical thinking. *Research in Higher Education*, *40*(2), 185–200.

Tyson, C. A. (2002). "Get up off that thing": African American middle school students respond to literature to develop a framework for understanding social action. *Theory and Research in Social Education*, *30*(1), 42–65.

U.S. Department of Education. (2010). *ESEA reauthorization: A blueprint for reform*. Washington, DC: Author.

Valenzuela, A. (1999). *Subtractive schooling: U.S.-Mexican youth and the politics of caring*. New York: State University of New York Press.

Manuscript received October 28, 2013
Final revision received September 3, 2014
Accepted September 8, 2014