

## PART III

# Creating Multicultural Classrooms



## Effective Multicultural Curriculum Transformation Across Disciplines

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*Resistance to multicultural curriculum transformation has long been assumed to be a function solely of faculty racism, sexism, classism, and so forth, especially in the fields of “advanced” mathematics and “hard” sciences. Although this may account for a percentage of that resistance, it is a small percentage. In fact, most faculty are interested in multiculturally transforming their curriculum. The problem is that few know how to go about doing it. Until recently, few, if any, doctoral programs included coursework on how to teach one’s discipline, much less how to teach it from a multicultural perspective. Faculty need opportunities to learn how to develop multiculturally oriented curricula content, pedagogical approaches, and methods of evaluating student learning and teaching effectiveness. Faculty also need opportunities to learn how to build positive relationships with increasingly diverse bodies of students, and how to create more supportive educational environments for that interaction to occur. This article provides faculty with an overview of effective approaches to multicultural curriculum transformation, applicable across disciplines vis-à-vis content, pedagogy, evaluation, relationship building, and environment creation.*

### Background

Multicultural curriculum transformation is an outgrowth of the field of multicultural education, which emerged in the 1970s (Nieto, 2000). During the 1980s

and into the early 1990s, multicultural curriculum transformation rose to the center of discussion, and often heated debate, on college and university campuses (Berman, 1992; Bloom, 1987; D’Souza, 1991). At the core of this discussion and debate was the question of whether curriculum should be transformed multiculturally.

Those in favor of transformation argued that a multiculturally transformed curriculum does for students of color, White female students, and working class students, among others, what the “canon” does for White, middle-class, male students. That is, it affirms them. The canon affirms White, middle-class, male students in terms of what it teaches, how it teaches it, and how it evaluates learning on it. In so doing, it privileges White, middle-class, male students above all other students, thereby giving them an advantage. A multiculturally transformed curriculum affirms all students and levels the playing field (Banks & Banks, 1997; Nieto, 2000).

Those opposed to transformation argued that the most valuable knowledge is already in place in the canon. A multiculturally transformed curriculum waters down the canon making it possible for less capable students to be academically successful (Bloom, 1987; D’Souza, 1991).

More interesting, those on both sides of this debate expose the sociopolitical nature of education, whether it is eurocentric or multicultural in nature. That is, they reveal that education is not neutral, but rather contingent on the relations of power in society (past, present, and future; Kozol, 1991; Nieto, 2000). In this way, we come to understand that education is not always intended to make us comfortable. A multiculturally transformed curriculum must push the envelope forward without overtaxing faculty and students in the process; walking a difficult but exciting line.

Although opponents of multicultural curriculum transformation remain in the academy, they are be-

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coming scarcer as research begun in the 1970s, and continuing today, shows that a multiculturally transformed canon is more rigorous than the eurocentric one, not less (Clark, 1999). Furthermore, a multiculturally transformed canon prepares all students for the world as it currently exists; a world in which cultural border crossing is the norm, not the exception, in the everyday (Giroux, 1992). Today the discussion and debate surrounding multicultural curriculum transformation focuses little on whether to undertake it, but rather, almost exclusively, on how to engage in it effectively (Nieto, 2000).

## Content

The development of multicultural curriculum content must focus on revising eurocentric curriculum content to include the representation of those traditionally under- or unrepresented in it, as well as on innovating altogether new curricula that, from its inception, is already multiculturally inclusive. There are seven parameters that guide both the revision and innovation processes (Clark, 1999).

The first parameter focuses on histories of oppression; the second, on lives, cultures, and countries of origin; the third, on contributions and works; the fourth, on designers and implementers; the fifth, on local responsiveness and global inclusiveness; the sixth, on autobiographical grounding; and the seventh, on student authorship, agency, and social action.

With respect to all seven parameters, it is important to note that changes made in curriculum content must be comprehensive. For example, to get students to understand even a relatively simple mathematical concept, we do not give them one example and expect them to have grasped it. On the contrary, we give them several examples. For students to truly grasp the concept of multiculturalism as it relates to each discipline, they must be presented with a multiplicity of examples that are well integrated into all the curricula to which they are exposed throughout their educational careers (Banks & Banks, 1997; Nieto, 2000).

### Histories of Oppression

Within the first parameter, the experiences of oppression of the traditionally underrepresented are emphasized, like the enslavement of Africans by Europeans (Clark, 1999). At first glance, this parameter might seem applicable only to courses with a substantive historical component. However, experiences of oppression can be included anecdotally and ahistorically and still be quite effective. For example, an 18th century English litera-

ture course might include discussion on why there are so few women writers, and why the few that are there often published under male pseudonyms (DuBois & Ruíz, 1990). Likewise, a course on x-ray technology might include discussion about who invented x-ray technology, who is credited with its invention, and why there is a discrepancy between the two (DuBois & Ruíz, 1990). In addition, including biographical information about theorists, historical figures, writers, inventors, and so forth can bring in aspects of histories of oppression that are highly relevant to the course in which these individuals' ideas, accomplishments, or works are already being discussed (Banks, 1997).

### Lives, Cultures, and Countries of Origin

Although it is very important to detail histories of oppression, it is equally important to detail information about the lives, cultures, and countries of origin of those oppressed. This second parameter is particularly critical because to detail only a person's or peoples' oppression leaves them at the level of victim or object, lacking authorship, agency, or subjectivity in their own lives and histories (Clark, 1999; Freire, 1990). Understanding the everyday life, cultural traditions, and economic, social, political, and geographic conditions of existence, among other aspects of a people, gives them this authorship, agency, and subjectivity (Freire, 1990). Yet, this understanding must not be superficial. That is, it must not illustrate underrepresented persons or peoples as exotic, fantastic, or peculiar. Rather it must illustrate them as "regular people." Their day-to-day existence, practices, and environment must be presented as normal to them as the overrepresented's are to the overrepresented (Nieto, 2000). For example, an anthropology course must not present Native American people as though they existed in the past and no longer exist today. Likewise, a history course must not characterize Native American people as "noble savages," but rather, as equally complex as the European Americans (Cleary & Peacock, 1998).

### Contributions and Works

Within the third parameter, the contributions that underrepresented peoples have made to all of our everyday lives, to all of our academic disciplines, and to all of our professional worlds, that we take for granted or that we know nothing of, must be articulated (Banks, 1997; Clark, 1999). This includes their theories, inventions, and equations, their involvement in the arts, their construction of historical buildings, their participation in wars, and so forth. This is where the substantive curriculum content change has

to be made (Banks, 1997). For example, a macroeconomics course that has previously taught only about the economic systems of the “first” world or “the West” must now be broadened to include content on the economic systems of the rest of the world. Furthermore, macroeconomic theories postulated by only first-world or Western economists must now be accompanied by theories put forth by economists from around the globe. This is the most difficult piece of multicultural curriculum transformation for most faculty. It requires extensive research. Today, however, unlike 20 years ago, there are faculty in almost every discipline who have pioneered the transformation process and can be of great assistance to their academic colleagues (Levine, Lowe, Peterson, & Tenorio, 1995; Nieto, 2000). There are also multicultural curriculum revision specialists on a number of campuses, many of whom provide curriculum change consultation to faculty on other colleges and universities nationally and internationally (University of Maryland, College Park & Association of American Colleges & Universities [UMCP & AACU], 1999).

In addition, within this parameter, we must teach the works of underrepresented peoples; their textbooks, novels, poetry, films, music, art, and so on (Banks, 1997; Clark, 1999; Nieto, 2000). In this way, faculty, especially faculty from traditionally overrepresented groups, can bring voices that represent a range of perspectives of people from traditionally underrepresented groups into the teaching of their discipline (Clark, 1999). For example, an introductory psychology textbook authored by a woman and another authored by a man may vary very little in terms of the content they include. However, the voice delivering the content in each book tends to vary significantly. Female authors are more likely to include feminist critiques of long-standing theories in this discipline (DuBois & Ruíz, 1990). In this way, students are still exposed to Piaget, Freud, and Maslow, but they are also exposed to new ways of thinking about Piaget, Freud, and Maslow.

### **Designers and Implementers**

In accordance with the fourth parameter, it should not be only members of overrepresented peoples who teach about the underrepresented with respect to any or all of the first three parameters. Underrepresented peoples should likewise be designing and implementing curricula about themselves as well as about the overrepresented in relation to every discipline as is appropriate for and relevant to each (Clark, 1999). Colleges and universities must undertake aggressive recruitment efforts to diversify their faculty ranks, typically the least diverse ranks in higher education

(Hurtado, Milem, Clayton-Pederson, & Allen, 1998). To retain a diverse faculty, the tenure and promotion process must be transformed with the same multicultural acumen applied to curriculum change (Orozco, 1997).

### **Global Inclusiveness and Local Responsiveness**

This fifth parameter encourages curriculum development that looks at the big picture and then brings that picture home. For example, a government or policy course that examines human rights violations in countries around the world must also encourage the examination of human rights violations in the United States. Related to the seventh parameter, as is discussed shortly, once human rights violations in the United States are examined, strategies, related to the course content, for how to stop these violations should be explored (Sleeter, 1996). For example, students might engage in the development of a bill that could potentially create policy changes that force the restructuring of our penal system or labor practices.

### **Autobiographical Grounding**

Incorporating faculty and student autobiography into the curriculum expands the notion of local responsiveness discussed previously (Bigelow, 1999a; Connelly & Clandin, 1990; Fay, 1997; hooks, 1993). In this sixth parameter, faculty are encouraged to share information about themselves with students and to create contexts in the course for students to feel comfortable doing the same. It is important to do this in both general and course-relevant manners. For example, an international student who discovers that a professor has visited their country of origin may feel more comfortable with this professor and, therefore, perform better in her or his class. In addition, a heterosexual women’s studies course professor, whose course covers lesbian, gay, bisexual, and transgender issues, may benefit from knowing that there are several “out” lesbians in the class who would welcome the opportunity to share their personal, as well as academic, perspectives on course content.

### **Student Authorship, Agency, and Social Action**

Students must be connected as authors of their own educational experience (Freire, 1990). Autobiographical grounding, as discussed previously, provides for a piece of this. However, courses must go further, requiring students to think critically, creatively, and not

reproductionistically. Having students memorize and then regurgitate information from a text or lecture without transforming it in any way, amounts to anti-education (Freire, 1990; Nieto, 2000). We cannot move forward as institutions, as a society, and as a civilization if our students are not taught to think for themselves and encouraged to do so. For example, in a geology course, students could be involved in the development of mnemonic devices for remembering highly detailed information about different rock samples instead of simply being instructed to memorize this information. Unlike data acquired through memorization, data acquired via concept-based learning is not only retained over the long term but retained in ways that allow it to be manipulated in the mind and recalled for purposes other than for what it was originally learned (Orozco, 1997).

Students must also be required to exert agency in their own educational experience (Freire, 1990). That is, they must be able to directly influence the course of their education every day. In the context of curriculum content, this means involving students substantively in the direction a course takes. A professor with well-developed facilitation skills can accommodate students doing this and still impart the body of content that professor believes a course may require (Zúñiga, Nagda, & Sedvig, in press). For example, students in a second-language class may want to learn language skills that will facilitate their interaction in everyday, rather than academic, second-language contexts. A skilled professor can then build into the curriculum opportunities for students to learn how to order food, buy merchandise, take public transportation, and so forth in the context of teaching verb conjugations, sentence structure, and other parts of speech (García & Baker, 1995). This discussion is augmented later under the heading “Problem-Posing Dialogue.”

Finally, as alluded to in the discussion of local responsiveness, multicultural curriculum transformation must lead students to engage in life-long social action (Sleeter, 1996). This means that multicultural curriculum transformation wants to cultivate more than educated students who are skilled in the area of their chosen profession. Multicultural curriculum transformation wants to cultivate an educated, skilled, and principled student (Sleeter, 1996). A principled student is one who considers the impact of every decision on humanity (Freire, 1990). This might mean that a future Fortune 500 CEO would consider alternatives to capital flight to increase profit margins so that domestic workers could continue to feed their families. To accomplish this, a business professor might include course content that encourages students to consider the questions, “Who is human for you?” and “What is the role of humanity in business?” In this way, our future business leaders might partner with future leaders of various communities of faith to

eradicate competition at the level of survival (for food, housing, health care, education, and subsistence-level employment), and encourage it at the level of ideas (for labor-saving technology, for resource-conserving machinery, etc.; Clark et al., in press).

## Pedagogy

Multicultural pedagogical transformation must focus on ways to provide students with a vast array of alternatives to traditional didactic (lecture-style) pedagogy to address differences in their learning preferences (Nieto, 2000).<sup>1</sup> There are nine parameters that guide this transformative process: problem-posing dialogue, multifaceted and multimedia-based instruction, assessment of student needs, organizational tools, instructional materials, use of instructional materials, instructional approach, instructional strategies, and learning activities (Clark, 1999). These parameters are designed to keep teaching and learning momentum going.

## Problem-Posing Dialogue

First and foremost, faculty must give up the notion of teaching as mastery (Freire, 1990). Although graduate education often trains one to think of oneself as a master of one’s discipline, this education is, in large measure, eurocentric. At best, professors could only be eurocentric masters of their discipline, highly skilled at imparting knowledge about their academic specialty from a largely eurocentric perspective. Even a professor who was highly multiculturally competent in her or his discipline could not really be considered a multicultural master of it. This is because so much multicultural information in every discipline has been obscured historically to the point that what we have begun to uncover today is likely only a fraction of what there is to know (Nieto, 2000). As our college and university classrooms become increasingly diverse, we must confront the reality that our students will undoubtedly have more knowledge about particular subjects than we do simply because of their different life experiences. Although, we should not assume that they do just because of these life experiences (Nieto, 2000). In this way, faculty and students begin to recognize the reciprocity of the teaching-learning relationship and begin to practice the collegiality that higher education seeks to pro-

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<sup>1</sup>Multicultural education discourages discussion of group-specific “learning styles,” primarily because not all students in a particular group learn the way their group is said to learn. Furthermore, many students have multiple learning styles, each corresponding to a different academic subject area.

duce—the mentoring of students into future professional peers (Clark, 1995). Given this, it makes more sense to think of professors as facilitators of the process of learning and actively involve students in this process (Freire, 1990). To do this, we must begin by asking students what they already know about a particular subject to make sure that the information to which they are exposed is new and at a level that challenges them. We must also do this to demonstrate to students that they already have knowledge about many things of which they may be unaware.

Next, we must ask students what they want to learn about the subject (Freire, 1990). With this mindset and information in hand, we can engage students in a dialogue by posing questions to them that cause them to think critically, relative to knowledge that they already possess, to arrive at answers to the questions about this new body of information. In this way, we no longer look on students, and they no longer see themselves, as empty receptacles into which we make deposits of information. Instead, they see themselves as critical agents, as discussed previously, in their own education (Freire, 1990). It is in this way that students are made responsible and take responsibility for their own learning.

In the context of facilitation, faculty must think consciously and carefully about their power: how it advantages some student perspectives while advantaging others in both positive and negative ways, as well as deliberate and inadvertent ones. Faculty must be concerned with how their voices as facilitators silence the voices of students or encourage them to speak (Zúñiga et al., in press).

### **Multifaceted and Multimedia-Based Instruction**

Second, faculty must vary the manners in which, and the vehicles through which, they communicate content (Nieto, 1999). This can be done more traditionally, via reading assignments, as well as in a more progressive way, via the appropriate and creative integration of educational technology like audiovisual aids (overheads, Powerpoint presentations, etc.), video offerings (VHS, Powerpoint films, etc.), and Internet explorations (e-mail, databases, World Wide Web; Gorski, 2000). Visual and performance arts can also be integrated, superficially or comprehensively, into the teaching of every subject (McLean Donaldson, 1996). For example, music can be played softly in the background of science labs, community theatre can be used to illustrate client–therapist scenarios, and poetry can be written to describe an historical event. The key here is to vary the manners and vehicles employed to keep things interesting and accessible to students with different learning preferences.

### **Assessment of Student Needs**

Next, faculty must vary the methods by which they assess student needs (Sedlacek, 1997). Faculty should try to ignore a student’s standardized tests scores and previous academic record, at least to start. Students should be allowed to enter each new learning experience with a “clean slate.” If faculty know how a student has performed previously, it will influence how they evaluate their current performance (Bigelow, 1999a,b). If a persistent problem begins to emerge with a student over the course of the semester, at that time it might make sense for the professor to check into the student’s record. Absent such a problem, a student should be given every opportunity to distance her or himself from a less than stellar past. It is also important to point out that high-achieving students report being able to establish reputations for themselves early on in their academic careers that then allows them to “slack off,” but continue to earn high marks (Clark, 1999). Ignoring the past performance of “good” students forces them to perform at a level that actually merits high marks. Alternative ways to assess student needs might include professor observation of students during a variety of specially designed classroom learning activities, having students orally self-assess with peers or the professor, or having students individually self-assess in writing (Clark, 1999).

### **Organizational Tools**

Fourth, faculty must use organizational tools (Clark, 1999; Nieto, 2000). For example, they can use a “weekly format” that is consistent: every Monday review reading assignments, every Wednesday have a class discussion, and so on. They can use a “daily format,” by beginning each class collecting assignments, then introducing new information, and so on. They can use “motivators” to get the immediate attention of students at the beginning of a class, such as carrying a surfboard to class to illustrate a particular physics concept. Similarly, they can use “closers” to signal the end of class, like a review of important discussion points. In addition to the syllabus, they can provide students with an agenda for each class so students will know what is going to happen that day. They can also use handouts to help students structure reading notes or that define key concepts or technical vocabulary with which students may be unfamiliar. The idea here is that there is variation in the context of structure creating a dynamic tension that engages students and faculty (Nieto, 2000).

## **Instructional Materials**

Fifth, faculty must use an array of instructional materials (Clark, 1999). These can include traditional texts, other kinds of books, newspapers, journals, magazines, workbooks, audiotapes, videotapes, games, computer software, among others. Here again, the idea is to employ an array of materials to keep the attention of both students and the professor.

## **Use of Instructional Materials**

Next, faculty must vary the use of instructional materials. For example, they can use texts that have multiculturally representative pictures, names, situations, and language. They can use eurocentric texts and encourage students to think critically about, dissect, and question what is being presented. They can use no texts at all and use a variety of other resources instead, or they can use all of these in combination. Once again, varying the use of materials maintains both faculty and student engagement (Nieto, 2000).

## **Instructional Approach**

Seventh, faculty must vary the instructional approach. For example, they can use a thematic approach in which students are encouraged to look for recurrent trends in astronomy. They can also use an interdisciplinary approach to teach philosophy in which students are encouraged to understand how the economic situation, political climate, geographic location, and cultural traditions of a people or an era influenced the development of a particular branch of philosophic discourse. Faculty can also use dialogic inquiry with students. For example, a history professor might ask students whether Christopher Columbus discovered, invaded, or bumped into the Americas (Cleary & Peacock, 1998). Faculty can also use a show, not tell approach (Freire, 1990). In this context, a chemistry professor might structure labs so that students discover answers to scientific questions on their own, rather than giving them the answers in a lecture.

Although not all faculty will be comfortable with every approach, faculty should make every attempt to develop a repertoire of approaches with which they are comfortable so that they can alternate among them. Again, the idea is to vary the approach to keep teaching and learning enticing (Bank & Banks, 1997).

## **Instructional Strategies**

Eighth, faculty must vary their instructional strategies (Clark, 1999). For example, they can have students en-

gage in whole class discussions or debates, small group work, partner work, individual work, one-on-one work with the professor, peer teaching and learning, or student teaching of the whole class. Varying strategies reduces monotony and increases the investment of students and the professor (Banks, 1997).

## **Learning Activities**

Ninth, faculty must employ a variety of learning activities (Clark, 1999; Nieto, 2000). For example, they can have students engage in assignments that require them to develop and employ, in varied measure, affective, cognitive, and kinesthetic skills through reading, writing, speaking, listening, and problem-solving initiatives. These can include intergroup dialogues, formal debates, impromptu explorations, research initiatives, classroom simulations, field trips, hands-on experiments, and so forth. Students learn best when learning activities are shifted every 20 min (Kunjufu, 1995). Therefore, for example, the first 20 min of a class might be a short film, followed by 20 min of discussion, and then perhaps a 20-min writing assignment summarizing the film and pertinent discussion points. As the adage says, variety (in teaching and learning) is the spice of life.

## **Evaluation**

Multicultural curriculum transformation also addresses the methods by which student learning and teaching effectiveness are evaluated (Nieto, 1999). A particular bias of this transformation process is that against standardized testing (Bigelow, 1999a,b). The efficacy of standardized tests has long been the subject of heated debate (Sedlacek, 1997). In general, multicultural education views standardized forms of evaluation as antithetical to the provision of an affirming and rigorous education (Bigelow, 1999a,b). This is because standardized tests are biased in favor of the manner in which White, middle-class, male students are socialized to demonstrate learning. Furthermore, standardized tests measure standardized test-taking prowess, not content area knowledge. Many faculty defend standardized evaluation because it is not very time consuming from which to develop, administer, nor discern results. It is also easy to delegate to graduate assistants. As long as class sizes remain high (over 25 students) and teaching is regarded as the least important consideration in faculty tenure and promotion, the chances of winning the battle against standardization in favor of alternative forms of evaluation remain slim.

Alternative forms of evaluation can include oral exams, essay tests, and take-home tests (Clark, 1999).

They can also include alternatives to tests altogether: term papers, field projects, research assignments, classroom presentations, and portfolio compilation and maintenance. As with pedagogical variation, variation in evaluation is critical. With a varied approach, students are able to demonstrate learning in ways that complement their strengths, while developing increased prowess for demonstrating learning in areas that coincide with their weaknesses (Kunjufu, 1995).

Another part of evaluation, students should be engaged in self-evaluation of their academic performance and effort. When involved in this way, students are amazingly honest about what they think their grade should be and are less inclined to express animosity toward even an average grade they had a hand in determining (Freire, 1990).

Students should also be involved in the evaluation of the course content and pedagogy, as well as in making recommendations for improving the course the next time it is taught (Freire, 1990). In this way, they become more invested in learning because they have helped to determine what and how they learned. Simultaneously students become better at learning as they become more aware of their learning strengths and weaknesses and, therefore, of how to prepare differently for evaluation in different academic disciplines and by different methods (Bigelow, 1999a,b). This also has the effect of improving the quality of teaching because student feedback lets the professor know what did and did not work. In so doing, it encourages faculty to continually revise and refine the teaching of their subject area, making it and them ever fresh in the process (Banks, 1997). This has the added effect of further perpetuating the reciprocal nature of teaching and learning discussed under pedagogy (Freire, 1990).

It is important that faculty and students separate out the evaluation of student learning and teaching effectiveness. This is because students may or may not learn because of or in spite of their own ability or performance, the professor's ability or performance, or particular aspects of the curriculum (Clark, 1999). Both faculty and students need to be able to discern which factor or factors had the greatest positive impact and which the greatest negative one. In this way, students can hone skills or adjust attention, and faculty can hone skills or adjust aspects of the curriculum.

### Relationships

Multicultural curriculum transformation also encourages faculty to look at the nature of the relationships between and among students and themselves both inside and outside of the classroom (Nieto, 2000). Academic departments should do this on a broader scale. Formal

departmental mentoring programs, which go beyond academic advising offerings, are encouraged for both undergraduate and graduate students (Asera, 1990; Clark, 1995). In this way, students are made to feel a part of an academic family while away from their family of origin. Here again, however, the importance of service endeavors in the tenure and promotion process needs to be reconfigured if faculty are going to be motivated to take mentorship seriously (Hurtado et al., 1998). Furthermore, colleges and universities should look at the nature of relationships between and among students, parents, faculty, staff, administrators, and members of the community that host the institution (Nieto, 2000). As mentioned previously in the discussion of pedagogy, examination and reorganization of relationships is paramount to the practice of collegueship that higher education seeks to produce—the mentoring of students into future professional peers. To be successful, this mentoring process requires the active involvement and support of all of the players in a student's education. This includes the student, the student's friends, family, extended family, faculty, staff, administrators, and local community members—owners of business frequented by the student, local law enforcement, among others (Nieto, 2000).

### Environment

Faculty, engaged in multicultural curriculum transformation must also be attentive to the impact of the physical and aesthetic organization of the immediate learning environment on students (Clark, 1999). *Is the classroom clean and neat?* Faculty should go to their classroom early to make sure that it is welcoming to students at class time. *Should the chairs be set up seminar style (around small tables) or in a circle to best facilitate the learning of the day's lesson?* Multicultural education discourages having students sit in rows (Zúñiga et al., in press). Staring at the back of someone's head is isolating and, therefore, not conducive to building a relationship with the students. Furthermore, it perpetuates the fictional notion of faculty as omniscient, discussed previously, by forcing a professor to sit or stand at the front of the classroom, instead of interacting with students (Freire, 1990). Classrooms where furniture is bolted to the floor prevents professors from being creative by changing the configuration of chairs and tables from one week to the next as the curriculum lends. *Do the pictures on the wall in the classroom affirm the representation of all the students in the class as well as those they may meet in the world beyond it?* Although faculty often have little control over the aesthetics of a classroom to which they are assigned from one semester to the next, they can use course relevant materials and student work

to decorate the walls during a single semester. If other faculty use the same room at different times, all should come together to coordinate the aesthetics of the room for the semester in tandem. This has the added effect of encouraging relationship building between and among faculty from different departments who might not otherwise meet each other or develop an appreciation for each other's disciplines.

Obviously, the discussion of the environment can extend beyond a classroom to a departmental space, an entire building, and a campus at large. This discussion can also extend beyond the context of concrete space, taking into account psychological space or campus climate (Hurtado et al., 1998; Sedlacek, 2000). Students, faculty, staff, and administrators must learn to engage all people, whether inside or outside their area of familiarity broadly conceptualized (e.g., race, ethnicity, language, geographic origin, socioeconomic class, gender, sexuality, disability, religion, physical appearance, marital status, employment category), with dignity and respect. Whether in the classroom or elsewhere on campus, and whether physical or psychological in nature, an affirming environment is crucial to the development of highly skilled and principled students (Sleeter, 1996). If students are not affirmed at home, so to speak, they will not join the local, regional, national, or international worlds beyond the campus in a manner that affirms others (Clark et al., in press).

### **“Advanced” Mathematics and “Hard” Sciences**

There exists in the academy and, to a lesser extent, in the larger society, the erroneous perception that “advanced” mathematics and “hard” sciences do not lend to multicultural curriculum transformation (Conciatore, 1990). The reality is that faculty who teach in these fields are pioneering the curriculum transformation in these areas at a more rapid pace than many of their counterparts in the social sciences and humanities (Frankenstein & Powell, 1997; Fullilove & Treisman, 1990). Ironically, the impetus for this may lie in the private sector. Advanced mathematics- and hard sciences-related business and industry have sent a clear message to the academy: they need graduates who can work well in multicultural contexts broadly conceptualized (Fullilove & Treisman, 1990). This means graduates who are efficient collaborative researchers and who have the skills to collaborate cross-culturally (who speak languages other than English, who can interact with people from other cultures and in other cultures, etc.). It also means graduates who can bridge theory and practice, who can aptly apply complex abstract concepts to the everyday, and who can use their expertise to solve real-world problems (Freire, 1990). Although many college and university

faculty scoff at the notion of applied learning (seeing it as somehow antiacademic), graduates who are products of it are rewarded (Hurtado et al., 1998). In fact, the more multiculturally related courses and extracurricular experiences advanced mathematics and hard science graduates work into their degree programs and cocurricular lives, the more money they earn, and the faster they are promoted. This is because they are better communicators than their eurocentrically educated counterparts (Nieto, 2000).

The multicultural transformation of advanced mathematics and hard sciences curriculum, although not yet commonplace, is by no means novel. In 1988, advanced placement mathematics professors at the University of California at Berkeley discovered the importance of creating a “learning interest culture” for students in their department (Asera, 1990; Fullilove & Treisman, 1990). This “culture” was established through the development and implementation of “workshops” in which an individual student's evaluation was based on the collective performance of his or her workshop group members. For example, a professor assigns a workshop cohort a problem to solve. Once the cohort has had time to solve the problem, the professor chooses, at random, one member of the cohort to explain the cohort's problem-solving process. The prowess with which the randomly selected student explains the process determines the individual grades for each member of the cohort. In this way, everyone in a cohort is deeply invested in making absolutely sure that each member of the cohort grasps the learning at hand. With the workshop initiative, students come to associate with other students with the same learning interests as themselves regardless of social identity group memberships (e.g., race, gender, language, etc.). This has the overall effect of enhancing the academic performance of all the students across the learning interest, encouraging the development of cross-cultural relationships and peer-teaching acumen, ultimately broadening the repertoire for learning of all involved. Not surprising is this initiative has had the effect of reducing racial tensions at the university and other places where it has been employed (Fullilove & Treisman, 1990).

A less erroneous general perception regarding the multicultural curriculum transformation of advanced mathematics and hard sciences is that these disciplines can only be transformed in the manner described previously, that is, *vis-à-vis* pedagogy, evaluation, relationships, and environment, but not content (Yuan, in press). Here again, the reality is that faculty in these fields are pioneering the transformation in this area by leaps and bounds as well (Van Sertima, 1992; Yuan, in press). A particularly exemplary example of this can be found in the work of Dr. Robert Yuan, professor of Cellular Biology and Molecular Genetics at the University of Mary-

land. In his forthcoming book, *The Diversity Notebooks* (working title), Yuan shows how cellular biology curriculum content can be multiculturally transformed in highly sophisticated ways. For example, in one course, Yuan assigns a student cohort a health issue, prevalent in a particular part of the world, to research. Based on their semester-long research undertaking, the cohort must make recommendations for how to best respond to the issue from the lens of the discipline. The issues assigned are intentionally complex, requiring students to wrestle with the many competing interests that scientists working as professionals in the field confront. For example, one cohort is assigned to explore the “breast-feeding versus formula use” debate in Northern Africa. At first glance, this might seem like an easy debate to resolve. However, on further exploration, students learn that one in three people in Africa are HIV positive. Then students learn that breast-feeding can be done safely even if one is HIV-positive at certain intervals during a child’s early development. Next, students focus on developing a curriculum that will help new mothers who are HIV-positive determine when it is safe to breast-feed. As their research progresses, the complexity of the debate comes to bear more and more.

Clearly, advanced mathematics and hard sciences lend to comprehensive multicultural curriculum transformation as much as any other discipline. Hopefully this dispels the erroneous perceptions that they do not encourage more wide-scale transformation across disciplines with respect to content and pedagogy, evaluation, relationships, and environment.

### Conclusions

Multicultural curriculum transformation can be done effectively by faculty in any discipline (Clark, 1999). Although the transformation process may seem insurmountable at the outset, it gets easier and easier as time goes by. Faculty should be encouraged to begin this process in whatever way they find most interesting and appealing. Seeking out discipline-specific colleagues who have already begun this process, as well as curriculum transformation consultants, can facilitate faculty in this endeavor (UMCP & AAC&U, 1998).

Because content change is the most complex part of multicultural curriculum transformation, many faculty opt to begin their transformation journeys vis-à-vis pedagogy, evaluation, relationships, and environment (Clark, 1999). This should not be viewed as resistance to the curricular change. On the contrary, it should be viewed as proactive engagement. This is because once faculty begin this journey in one direction, information spurring them into another necessarily emerges. In this way, faculty begin with what is most comfortable and fa-

miliar and are eventually eased into what seemed too foreboding to ever broach.

No two curriculum transformation experiences will be the same. Faculty should be encouraged to take into account their personalities, their discipline, their specializations within their disciplines, and the information they glean from curriculum transformation research in determining a unique course for their curriculum transformation undertaking.

At the core of multicultural curriculum transformation is the hope that, once it is achieved comprehensively (in all schools, colleges, and universities; at all grade levels; in all discipline areas; and with respect to content, pedagogy, evaluation, relationships, and environment), all students will learn, from nursery school to the completion of doctoral degrees, the value of the participation of all peoples in the creation and evolution of our world (Banks, 1997; Clark, 1999; Nieto, 2000; Sleeter, 1996). In turn, this will teach them that each of them is as important as anyone else, but no more important than anyone else. With this information foremost in their minds, the way they come to view and interact with others will be positively transformed along with the way our global society is ultimately configured.

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