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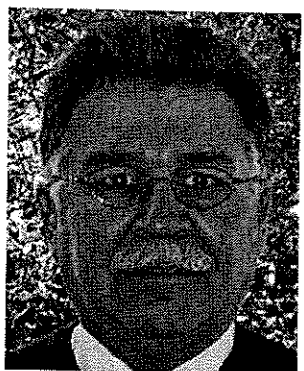
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Are We Talking Enough?



WILLIAM YSLAS VÉLEZ
WASHINGTON, DC
14 MAY 2004

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We want minority students to choose majors in science, engineering, and mathematics departments and, we hope, proceed to careers in SEM.

In my March 2004 article, "The Role of Academic Departments in Diversity Issues," I pointed out what I perceive to be a problem in achieving diversity in our universities. It is the upper administration that purports to espouse the necessity of diversity, but it is the departments that do the hiring and carry out the teaching in a university. If minorities are to enter careers in science, engineering, and mathematics (SEM), they must be trained and integrated into these very same departments.

Universities might have outreach components housed in administrative units that serve to increase the presence of the minority community at the university but, in the end, those minority students arrive at the university and take courses *in departments*. We want minority students to choose majors in SEM departments and, we hope, proceed to careers in SEM. This transition into SEM professionals is not going to occur without the active participation and support of SEM departments.

The Steps Taken Toward Addressing a Problem in Academia

How are we to achieve diversity in our SEM departments? If this were an easy problem, we wouldn't be having this discussion today. It appears to be a difficult problem, but academics are used to dealing with difficult problems. It is our bread and butter. By reviewing how academics address problems, perhaps we can gain some insight into why we have made so little impact on diversity issues. The following five steps shed light on how academicians address a research problem.

Step 1: An idea impinges on my brain that catches my attention. This could come

about through a conversation, by reading an article in my field, or simply as a result of the fruitful deliberations of an inquisitive mind as it struggles to better understand the subject matter.

Step 2: Is this problem tractable? Is it interesting enough for me to expend intellectual energy in trying to solve it? Can I solve this problem with the resources at hand and with the knowledge and insight that I have about the subject?

Step 3: Once I have decided that I will attack the problem (and *attack* is the operative word here), I begin gathering information, searching for data, reading background material, and devising a strategy to solve it. At some point, a period of intense concentration occurs whereby I try to bring together these different resources to bear on the problem.

Step 4: A series of experiments is planned that will shed light on the problem. The results of these experiments direct us toward a solution or a reformulation of the problem.

Step 5: A solution is obtained, or perhaps the problem is abandoned. In either case, insight was sharpened and knowledge generated. The whole process generates more ideas and could lead to further research.

Applying the above steps to the issue of increasing diversity leads us to the proper analysis for implementation. The first step is the most critical, but if it does not occur, then the prodigious intellectual machinery (Step 2) and the departmental resources (Step 3) are not going to be brought into play to address this problem, not to mention the possible experimental programs (Step 4) that could be used.

However, the sad reality is that Step 1 does not occur. Where are the rich conversations on this problem that normally constitute the first step? There are no classes in SEM departments that deal with diversity issues. Diversity does not normally come up in the day-to-day workings of a department. As there are almost no minority faculty members in a department, this issue is further ignored. Almost none of the many colloquia speakers that visit the department have diversity as their focus. At national conferences, there are special sessions on diversity, but these are often poorly attended by SEM faculty members.

Lost Opportunities

The university is rich in opportunities to have conversations about areas of interest to the faculty members. If enough interest in a particular subject area is generated, then courses are developed and taught to present new ideas to the students. In the meantime, the process of teaching provides ample opportunities for faculty members to investigate their subject matter, to probe more deeply to obtain an understanding of it, and to discover connections with other areas of investigation.

The training of graduate students is also an integral part of the academic enterprise, and the entire process is rich in subject-matter conversations. It is so important that a faculty member (the thesis adviser) be assigned to a student so that one-on-one conversations occur. Graduate students possess a wealth of knowledge themselves. Most faculty members realize that learning is a "two-way street" and that graduate students can contribute to the idea-generating process.

To further support the research enterprise, subject matter colloquia occur on a weekly basis, with visitors brought in to present new research results. National and international conferences continue these conversations beyond the borders of the universities, allowing for conversations in different languages, literally and figuratively.

All of these conversations are further supported by state and federal governments. Training grants, research grants, and travel and conference grants are all part of the mechanism that allows for the rich conversations that serve to move the frontiers of knowledge further. This support also allows independent investigators to give free rein to their ideas. With all of this support and infrastructure, it is no wonder that our universities have become famous for their research output.

Final Thoughts

Administrators have to find a way to begin conversations about diversity that will serve to engage the faculty in this important issue. The underrepresentation of minorities in the undergraduate, graduate, and faculty ranks clearly shows that faculties around the country have not bought into the importance of diversity. If the faculty does not take the first step in recognizing the issue of diversity as a problem that engages it, then what actions will it take in addressing the problem?

Too often we expect that action to be based on altruism, and we can see the results of this expectation by looking at the underrepresentation that exists. There are simply too many pressures on a department and its faculty members. Resources are limited and the players behave in ways that will best ensure their survival. Administrators should tie in a department's survival with its achieving the diversity goals of a university.

As a way of getting that first step to occur, department heads and college deans should recommend to their colloquium chairs that a speaker on diversity issues be part of the regular colloquium series. There are many examples of respected working scientists who have managed to increase diversity in their own departments. Universities could learn from their efforts and modify the successes to address the local situation.

It is manifestly apparent that an academic department's survival has nothing to do with achieving diversity, and it is time for administrators to tie in a department's survival with the stated goal of the university--achieving diversity in the university system.

William Yslas Vélez is a professor of mathematics and University Distinguished Professor at the University of Arizona in Tucson. His column for administrators and faculty members, "Suggestions for Achieving Diversity in Academia," appears on MiSciNet every other month. He may be reached at velez@math.arizona.edu.

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