



## The Biology of HIV/AIDS: A Case Study in Community Engagement

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# The Biology of HIV/AIDS:

## A Case Study in Community Engagement

FRANK CACCAVO, JR.

The focus of most high school and collegiate science courses is typically the production of knowledge. Students are taught facts, figures, and techniques that provide a structural framework for scientific problem-solving. Science faculty often feel burdened under the sheer mass of information that must be conveyed over the semester, and the hot breath of getting through the textbook provides a persistent tingling at the napes of their necks. This leaves precious little time for placing the information we present in a societal context. However, high schools, colleges, and universities are now beginning to realize that civic responsibility is also a necessary component to student education. Many high schools even require community service as a graduation requirement. Science faculty are charged not only with effectively conveying knowledge, but giving students practice in considering the implications of their knowledge (Vaz, 2005). Given the increasingly significant impact of science and technology on our lives, faculty should consider community engagement as an important, if not integral, component of science education. Such practice would include engagement of students, our future scientific leaders, with the community so that they can begin to make connections between their disciplines and important public questions (Vaz, 2005).

David Caputo describes a number of obstacles that faculty face when trying to incorporate civic engagement into their courses (Caputo, 2005). Faculty must be committed to civic engagement as an integral component to the course. Rather than an add-on used to spice up a course, the faculty must see the civic engagement as a core value. Faculty must also be willing to do the extra work required to develop and administer the civic engagement component of the course. Organizations willing to participate and provide the type of engagement necessary for a meaningful student experience are often in short supply. Faculty must not only shake the tree but also organize what falls to the ground. This takes considerable time and further underscores the absolute requirement for faculty devotion to civic engagement as a core component to the course. Finally, the fact of the matter is that not all students want to be engaged. It is therefore important that faculty clearly define their expectations and make the engagement activity relevant to the course.

### A Scientific Context for Engagement

The Biology of HIV/AIDS (BI308) is an elective course for undergraduate biology majors. This course probes what it is about HIV/AIDS that allows this virus/disease to so effec-

tively elude the considerable power of modern medicine and technology. Students learn that ultimately the answer to this question lays in the complex biological, socioeconomic, political, and religious milieu in which this virus/disease thrives. Students find the concepts and information presented in this course both challenging and exciting. They must grapple with the customs and behaviors, and their own preconceptions and prejudices associated with any sexually-transmitted disease. However, gaining insight into the cutting-edge medical research surrounding HIV/AIDS intrigues them. The statistics are shocking. Forty two million people are infected worldwide. There are 14,000 new infections every day. Over 28 million have died of HIV/AIDS since 1981. There are over 12 million orphans in Africa as a result of HIV/AIDS. These numbers, and the stories behind each of them, elicit tears in some students and a passion to effect change in others. A number of students in years past have expressed a desire to connect with the content in a more action-oriented or hands-on way. In considering these requests, it became apparent that the nature of this course provided an appropriate format for incorporating a community engagement component into the course objectives.

A number of education institutions have come to realize the critical role that they can play in responding to the HIV/AIDS pandemic. For example, Project Pericles, an initiative sponsored by the Eugene Lang Foundation, invites participating colleges and universities to “instill in students an abiding and active sense of social responsibility and civic concern” (Lang, 2005). The Periclean Scholars program at Elon University is dedicated to making local and global communities aware of the issues surrounding the spread of HIV/AIDS in Namibia, Africa. Many American universities are partnering with universities in the developing countries hardest hit by HIV/AIDS. Washington State University, the University of Botswana, and Botswana College of Agriculture have incorporated HIV/AIDS into key components of their environmental science partnership. Southern New Hampshire University and the Open University of Tanzania are building a graduate-level program in community development containing a course focused on HIV/AIDS. Middle Tennessee State University has partnered with the University of Durban-Westville to address water sanitation and hygiene through education. The American Association for the Advancement of Science Africa Program has begun to develop undergraduate core courses on HIV/AIDS and its impact at African universities.

A number of pedagogical strategies for fostering community engagement in the classroom have been described (Schneider, 2001). These include collaborative inquiry, experiential learning, service learning, integrative learning, and project-based learning. The latter strategy worked best for my Biology of HIV/AIDS course. This strategy allows students

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to organize and develop unstructured problems, sometimes in contact with other students and frequently in contact with off-campus groups and organizations. Students bridge theory and practice and put knowledge to work in applied situations. (Schneider, 2001).

The theme for the engagement component of BI308 was community engagement defined as *the production of new knowledge and the placement of that knowledge in the service of moral aims* (Burns, 2001). Small groups of students wrote proposals in which they described how they would use their knowledge of HIV/AIDS for this purpose. The project goals were intentionally broad and open-ended to encourage students to make their own connections between the course content and the community. However, in order to provide context to the project, students met with HIV/AIDS activists from the local community. One of the activists was Steve Himley, executive director of Two Tunics. This organization is building anti-retroviral (ART) clinics in KwaZulu-Natal, South Africa. Two Tunics provides clinic staffing, operational costs (including ART drugs), and local personnel training in ART. Another activist was Susan Fabrikant, director of the Spokane AIDS Network (SAN). SAN provides emotional support, case management, food services and nutritional counseling, and treatment adherence assistance to people living with HIV/AIDS in Spokane, Washington. The final activist was Susan

Slonaker of Reach Ministries, which conducts summer camps and mentoring programs for children infected and affected by HIV/AIDS. Each activist made an in-class presentation, and then students interacted with them to develop ideas and strategies for their community engagement proposals. The activists also agreed to be available to the students through telephone and e-mail for additional support as their proposals progressed.

The main objectives for the community engagement proposal were to encourage students to:

1. think about their role as scientists in the local and/or global community
2. forge their own connections between what they were learning in class and their civic responsibility
3. gain a better appreciation for communities outside of their own, and to see how they, as scientists, could influence those communities for the better.

## A Community Engagement Proposal

The proposal was five to ten pages in length and due on the last day of class. It had three sections. The introduction addressed what community the students were engaging, why they chose to engage this community, and what challenges

they faced in engaging this community. The methods section described what information the students were presenting and provided a rationale for why that information was important to the community they were engaging. The methods section also described how the students would present this information and how the information would benefit the community. Finally, an assessment section described how the students would qualitatively and quantitatively assess the success of their engagement. The rubric for evaluating the proposals is shown in Table 1.

The titles of the proposals that were submitted are shown in Table 2. Most of the groups proposed to engage the local youth community in Spokane. A few of the proposals were international in focus. The best proposal sought to engage migrant orchard workers through a combination of HIV testing and edu-

cation. This proposal was rooted in the facts that the HIV prevalence among migrant workers is three times that of the general U.S. population, these workers frequently engage in high risk behavior, and lack adequate science education. The students proposed a company-sponsored employee appreciation event in which workers could be tested and then educated on HIV/AIDS prevention through testimony-styled presentations. The students were clearly aware of the challenges facing such a program, including language barriers, the migratory nature of their "students," and funding the program. They carefully chose the level and content

**Table 1. Rubric used to evaluate community engagement proposals in BI308.**

PROPOSAL COMPONENT	POINT VALUE
Attendance at and participation in AIDS activist panel discussion	25
Proposal turned in on-time	10
Proposal typed in 12 point font with one inch margins and between 5 and 10 pages in length	15
Proposal contains the following three sections:	
1. An introduction that addresses these questions	30
<ul style="list-style-type: none"> <li>• What community you are engaging?</li> <li>• Why you are engaging this community?</li> <li>• What challenges do you face in engaging this community?</li> </ul>	10 each
2. A methods section that addresses these questions	50
<ul style="list-style-type: none"> <li>• What information are you presenting?</li> <li>• What is the rationale for presenting this information?</li> <li>• Why is this information important to the community you are engaging?</li> <li>• How will you present this information?</li> <li>• How will this information benefit the community?</li> </ul>	10 each
3. An assessment section that addresses these questions	20
<ul style="list-style-type: none"> <li>• How will you qualitatively assess the success of your engagement?</li> <li>• How will you quantitatively assess the success of your engagement?</li> </ul>	10 each

**Table 2. Community engagement proposal titles.**

• Education of AIDS in Spokane's Youth
• Youth AIDS, Jamaica: Education and Prevention
• SoCal AIDS Tour
• Engaging the Migrant Farm Worker Community in HIV/AIDS Education
• Blood Drive for African Children
• HIV/AIDS Prevention Program in Mumbai, India
• AIDS Community Outreach Project (ACOP)

of the presentations that would have the greatest public health impact on this community. Finally, they proposed the use of an oral survey to quantitatively assess how much each participant comprehended and retained from the education portion of the program.

## Evaluation of Learning

Students completed an anonymous evaluation of the community engagement component of the course that asked them to rate key objectives of the component on a numerical scale (Table 3). The mean scores from this evaluation suggest that the objectives were met. The students did not find the activist presentations very helpful in preparing their proposals (mean score of  $3.12 \pm 1.42$ ). This was surprising since the students were obviously riveted during the presentations, asked numerous questions, and continued conversations with individual activists at the end of that class period. Future iterations of the course should make a more clearly-defined link between the activist presentations and the proposals. Alternatively, it may be more helpful for the students and teacher to spend a day actually engaging in some community service within one of the activist organizations.

Written comments on the evaluation form indicated problems such as time constraints and working in groups, but most of the students found this a worthwhile endeavor. For example, one student commented that "I think it is a great way to get students to think outside the box of science. This project helped me link science and society." Another student commented that "I really enjoyed doing the project. Someday I want to go to Africa and doing this proposal helped me to see some of the hardships I may face there." Finally, one student "thought this project was a constructive and effective use of time. It gave us a chance to look past education to how it applies to the real world."

## Conclusions

This project challenged science students to engage the community on two different levels. They first had to interact directly and personally with HIV/AIDS activists. The proposal then encouraged them to think about and describe ways of engaging a larger community through the prism of their own scientific knowledge. Evolutionary theory, stem cell research, and disease prevention are just a few of the many topics where science is juxtaposed with the lay community. Scientists are increasingly called upon to effectively communicate with people from a variety of cultural, educational, and socioeconomic backgrounds. Training our future scientists in community engagement is therefore an essential component of science education, and the exercise that I have described in this paper is but one means of achieving this goal.

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**Table 3. Assessment of community engagement activity.**

QUESTION	SCORE*
The community engagement proposal helped me to realize the connection between my science education and civic responsibility.	$4.12 \pm 0.93$
The presentations by the HIV/AIDS activists were helpful in the development of my proposal.	$3.12 \pm 1.42$
Through this proposal I came to appreciate the challenges faced by communities other than my own.	$4.00 \pm 0.96$
The community engagement proposal helped to provide a sense of purpose to the information I learned in this class.	$4.16 \pm 0.94$
* Scores represent the mean scores for the entire class (n=25) $\pm$ the standard deviations from the means. Students responded on a numerical scale from 0 (disagree) to 5 (agree). Data are from January of 2006.	

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