

## Can GLOBAL WARMING Heat Up Environmental Education?

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**B**ronx Community College (CUNY) launched “Global Warming Campus Awareness and Action Days” in celebration of Earth Day, 2007. The purpose of this program was to raise awareness of environmental issues in the college population, especially students. After the Salzburg Seminar of 2006, I decided to incorporate what I had learned during the International Study Program (ISP 15) on “Community Colleges as Sites of Global Citizenship.” In fall of 2006, I organized a Brown Bag Faculty Luncheon on Global Warming for The International Education Week. The positive response inspired the birth of The Bronx Community College Climate Change Committee (BC5). The Committee, with support from the Center of Sustainable Energy (CSE) at BBC, organized a two-day event: Global Warming, Campus Awareness and Action Days.

Many students who enroll in community colleges do not have an adequate foundation to attend undergraduate science courses. Environmental Education (EE) “... as an educational strategy, has emerged since the 1970s” (Walker, 1997). However, there is worldwide concern about how EE is handled and taught, as evidenced by the study of many scholars. Science education has always been the “Achilles’ heel” of national education. Adequate numbers of prepared teachers are still lacking. Science and particularly environmental literacy is inadequate, and appropriate curricula are not available or updated. Climate change, partially addressed with limited information in science textbooks, is not fully understood by students, their families, and teachers (Abbasi, 2006; Blumstein & Saylan, 2007). The new generation does not spend enough time doing outdoor activities but rather is engaged in an electronic culture including cell phones, Ipods, video games, etc. While it is not desirable to prevent access to this new technology (because of its benefits), it must be pointed out that the “electronic generation” spends too much time on indoor activities and has lost contact with nature (Abbasi, 2006). EE has never gained adequate status since it originated as a grassroots movement and was then considered counter culture. It has been perceived with suspicion by many politicians because they believed that EE was not beneficial to economic growth (Blumstein & Saylan, 2007). In addition EE has never been adequately promoted in the classroom by teachers because they are afraid of possible opposition either

from parents or the school administration (Abbasi, 2006).

In the past, educators tried to engage students in a direct hands-on approach such as Participatory Action Research (PAR), and students conducted investigations in conjunction with teachers and local community leaders (Mordock & Krasny, 2001). Concerns about EE are not just a national issue; worldwide educators have tackled the subject. For example, in England researchers conducted a study in conjunction with teachers, students, and community leaders focusing on how students perceive and behave in their environment and community. It also focused on how this experience can be incorporated into curricula to prepare students to “... become environmentally conscious and active citizens, and so contribute towards more sustainable urban environments” (Barratt Hacking, Scott, & Barratt, 2007).

After screening the documentary “An Inconvenient Truth” in my biology class, I discovered that students were interested, but still confused, by this topic. It was with disbelief that I listened to one saying that she had never heard about it. When a colleague from the history department had exactly the same experience, I resolved to launch a poster contest on Climate Change and Global Warming. I made the assignment mandatory for my students, to be counted toward their final grades.

### Materials & Methods

The two-day event was publicized to the entire campus. Students, faculty, staff, and administrators were invited to participate. The program consisted of a live presentation of the documentary “An Inconvenient Truth.” Al Gore’s team trained the documentary presenters, who also offered teach-in sessions. Community leaders and representatives of the private sector affiliated with environmental issues participated. I prepared a flyer with suggested Web sites for reference and poster guidelines as below.

*Posters should answer the following questions:*

1. What are the causes of global warming?
2. How have we as humans contributed to global warming?
3. What action should be taken in response to global warming? Who (governments, businesses, institutions, etc.) should do what and why?
4. A) What can Bronx Community College do about global warming?  
B) What can students do individually?

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A committee was appointed to evaluate the following criteria:

- creativity
- critical thinking
- quality of presentation
- writing skill.

Cash prizes of \$200, \$100, \$75, \$50, and \$50 were awarded. The organizers considered the event successful when they viewed the signatures of more than 450 people who came to see the exhibition of 50+ posters and engaged in discussion with the documentary presenters and other speakers. The event took place before the end of the semester so it was not possible to incorporate the purpose of raising awareness in the students' curriculum.

This study includes 20 biology students and one non-biology student. Only answers to Question #4 were analyzed. The other answers counted only for final grades as the emphasis of the research was on the expectation of students from their campus and their personal contributions to climate change and global warming issues. The answers were grouped into four categories: education, energy savings, social engagement, and transportation. Each answer was identified as a single entry (See Figure 1).

## Data Collection

Fourteen students answered the question *What can BCC do about global warming?* (4A) and 21 students answered *What can students do individually?* (4B).

Students' expectation of BCC regarding **education** (4A) was based on courses, workshops, seminars, research, screening of films and documentaries, invitations to speakers and community leaders, as well as activities such as planting trees or distributing bottles/mugs to eliminate Styrofoam or paper cups.

With respect to **energy savings**, students proposed "Going Green" by reducing (using stairways instead of the elevator), reusing (both sides of paper), and recycling (paper/bottles). One student's poster had a picture of paper waste with stacks of printed material never used. He/she suggested accountability for energy bills.

For **social engagement**, students suggested interaction with other colleges and community leaders, pressure on legislators, and participation in competitions such as the College/University EPA Challenge on recycling. No answers were provided on **transportation**.

Students believed that **education** should be mainly the responsibility of BCC, with the exception of outdoor activities such as hiking and bicycling (4B). **Energy savings** was highly addressed. Students were indeed concerned about their home budgets and "educated" purchasing. They emphasized reducing, reusing, and recycling activities, such as changing incandescent lamps to compact fluorescent ones, reducing harmful wastes, and reducing carbon emission by planting trees and preventing deforestation.

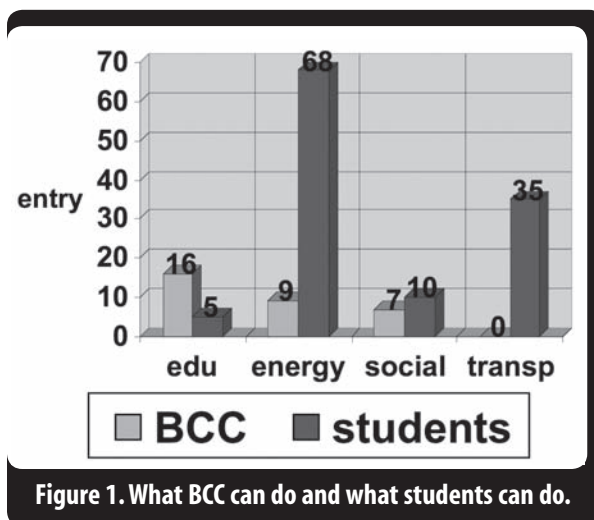


Figure 1. What BCC can do and what students can do.

For **social engagement**, students promoted a more active role in their community, and life style changes. For **transportation**, students suggested buying energy-efficient vehicles, driving less (and more intelligently), using public transportation, bicycling, car pooling, and walking.

## Discussion

It appears that the answers were appropriate and honest, and recommendations were reasonable and not difficult to achieve. Students found a direct connection between themselves and the issue of climate change and how it can impact their future lives (Connel et al., 1999).

Fourteen students answered Question 4A regarding BCC while 21 students answered Question 4B regarding the students themselves. This may suggest that students have fewer expectations from their campus than from themselves. While students have high expectations from BCC in education (16 answers to 4A and five answers to 4B), the opposite applies to the measure for saving energy (nine answers to 4A and 68 answers to 4B). This suggests that students are very concerned about their personal budgets. Social engagement does not indicate a major difference (seven answers to 4A, and 10 to 4B), while a striking difference is noticed for transportation (no answers for 4A and 35 to 4B). BCC is located in Bronx, with the same transportation issues that apply to New York City. A shuttle bus operates between the campus and the closest subway train at certain times of the day, and there are a few bike racks available on campus. However, more than 900 parking permits are issued every year to students.

## Conclusion

Were the goals met? The event was open to everybody and more than 450 people signed in—a pleasant surprise for the organizers. The program was considered successful based on the following:

- Awareness was raised for environmental issues as supported by the number of attendees.
- Students correctly addressed the questions of the poster competition and viewers were interested in the material presented.
- The live presentation of the Al Gore documentary, "An Inconvenient Truth," was received with enthusiasm, and students interacted by asking the presenters questions (a classroom lesson of sorts).
- The interaction of community leaders and special guests from environmental groups and industry facilitated a connection between the campus and outside job opportunities.
- A compact fluorescent lamp (CFL) was given as a gift to anyone who attended the event and pledged to raise awareness of environmental issues at home.
- A local TV channel and a newspaper publicized the event. Students were thrilled to see a big audience and,

though they were initially concerned about their ability to carry out the assignment, became proud of having their work on exhibition.

For many of them, the event was a very rewarding educational experience due to the fact that they discovered within themselves an ability and a competence previously unknown, and this enhanced their self-confidence. The cash prize was an additional highly-appreciated incentive. It was not possible to incorporate the awareness raising in the curriculum because it was too late in April and also because the Curriculum Committee required time to evaluate new proposals. Nevertheless, posters were scored and the value incorporated in the final grades. Organizers decided to work on an Introductory Course on Sustainability to be offered as an elective.

It would be fair to say that the format prize-contest/ exhibition/guest speakers/community leaders/gift-bonus could be considered a model for other schools/campuses interested in pursuing this avenue for EE. The information produced on climate change and environmental issues is growing so fast that finding material to recreate the event of BCC and engaging students in a poster competition should not be difficult. This contest should be considered a work-in-progress or a pilot project.

How to assess the event? Due to time limitations, it was not possible to assess if the awareness raised by the event induced behavioral changes in the lives of the students. In the future, the organizers decided to give an assignment to the students at the beginning of the semester to be completed by the end of the academic year. Therefore this project can be refined and tuned with more carefully-crafted questions that eventually will be compared to the data collected in the past. Thus a data bank will be created for future study. As suggested by Blumstein and Saylan (2007), a pre- and post-event survey can be used in different assignments, such as promoting the use of compact fluorescent light (CFL) and comparing home energy costs versus those with incandescent lights, or engaging in competitions with other campuses, or nationwide, such as the Environmental Protection Agency (EPA) University Challenge. Since it was discovered, after screening Al Gore's documentary, that some students were completely surprised by the content, it would be interesting to submit a questionnaire with questions related to the environmental issues before the event, and then afterwards resubmit the same questions. A comparison of the results would assess if the experience of attending/participating in the event had indeed modified students' thinking and motivated them to behavioral changes with respect to sustainability. Following the study by Barratt Hacking et al., participatory research could be undertaken with students and their families, educators, and community representatives where students are "partners in making decisions about the research direction and process rather than being objects of the research" (2007). Bronx has among the highest asthma rates in the nation, due mainly to emissions from fossil fuel-burning power plants, buildings with poor heating systems, truck traffic, etc. A PAR carried out by BCC students would be beneficial to this borough. The framework to carry out this assignment must include "dialogue between the researcher who brings multiple outside perspectives, and insiders, who bring experience and detailed understanding of the setting" (Mardock & Krasny, 2001).

Educators would understand how students perceive environmental experience and their findings could be incorporated in a new curriculum. A broader competition with other campuses has been considered by organizers. This would be in accor-

dance with the CUNY commitment to create a Sustainability Task Force, in response to the request of Mayor Bloomberg to cut down carbon emissions 30% by 2007.

Echoing the concern of Blumstein and Saylan (2007) and their recommendation to use "evidence-based" approaches to improve EE, it could be very effective to assess the behavioral changes of students if different techniques are employed. Students could be trained to become educators to other students. For example, students trained in recycling could teach their peers how to recycle material in the classroom. They could make a survey in two classrooms and select one for trial where they teach their peers and the other room for control. Data collected after a few weeks could be compared with that of all selected students. Other ways to engage students could be planting trees, cleaning the park adjacent to campus, calculating "the family carbon footprint" (Abbasi, 2006), figuring out how to reduce energy bills, or finding sponsors who could provide money or other resources for EE. Students are also informed of job opportunities such as Summer Youth in the Environment Program offered by the Department of Environment Protection (DEP) that provides payment by the hour after completion of training. Some students upon graduating have obtained full-time positions with DEP. This is an example of how students began with a poster competition and ended up landing a job in what is called a "Green Market."

The combination of a poster competition, live presentation on global warming, community leaders' engagement, "Green Jobs" presentation, and free distribution of CFLs created an interesting milieu containing recommendations suggested in the Abbasi report (2006). The organizers believe that at the beginning of the next academic year, a more structured event can be prepared with different means to assess the validity of the project.

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