Minorities In Science Essay, Research Paper

The Issues of Minorities and Science

There are many issues in today?s scientific world. Some of these issues involve dealing with saving the world from global disaster, or even finding a cure for cancer. However, not many people have taken time to look at the scientists making these discoveries. White male scientists consistently have higher paying, more prestigious jobs than most minorities in their field. Science is a field that is ruled primarily by white males, and it requires careful attention paid to issues dealing with finding a way to balance the problem.

When dealing with the concern of minorities in science, one has to look back at the education of the individual involved. For example, from 1992 to 1997, the enrollment of African-Americans in American colleges and universities dropped approximately 17 percent (Campbell ?Issues? 21). Advanced degree programs have also been declining. The enrollment rate for African-Americans in these programs dropped an astounding 21.8 percent in 1996 (Campbell ?Issues? 21). There was also a 19.3 percent drop in the enrollment of Latinos in these advanced degree programs (Campbell ?Issues? 21).

Now the question that must be answered is, ?Why is there such a drop in enrollment?? Campbell believes one reason is due to lack of financial funding (?Issues? 22). Campbell also stated that the Task Force on Minority Participation in Engineering called for a minimum of $36.1 million a year to help create parity, but only produced 40 percent of that projected funding (?Issues? 22). Another reason for the decline in the number of minorities entering science-related fields is the fact that only a small percentage of entering freshmen obtain a degree in the major they choose. For example, it is estimated that only 36 percent of entering freshman majoring in engineering will actually earn a degree in the proclaimed area (Campbell ?Issues? 22). This is astonishing when reviewing the economic prospects students have after obtaining a degree in the engineering field. It is estimated that an electrical engineer makes approximately $43,000 a year (Hansen 7). Chemical engineers are even better off, earning approximately $45,000 a year (Hansen 7). It is important to realize that these starting salaries are higher than the starting salaries of most other graduates, but the number of minorities exiting colleges and universities with a degree in the engineering field continues to decline.

Lack of encouragement is another reason minorities do not pursue degrees in science, or in some cases, even pursue a college degree. In the case of Tillie, a character in Paul Zindel?s The Effect of Gamma Rays on Man-in-the-Moon Marigolds, she was faced with harassment from her classmates and sister (15). Add to this the strong lack of encouragement from Tillie?s mother, and it is a wonder how Tillie could even keep her goals in line (Zindel 9).

The story of Tillie begins with Beatrice (Tillie?s mother) speaking to Mr. Goodman, Tillie?s science teacher (Zindel 3). Tillie?s mother has had all of her hopes crushed, but she does have some ?fight? left in her, much of which is spent on wreaking vengeance on everyone around her (Oliver 409). Mr. Goodman is concerned with Tillie?s attendance (Zindel 3). Tillie is often absent from school, primarily due to Beatrice keeping her from attending. Mr. Goodman wants to know if there are any problems (Zindel 6). Tillie?s mother yells at Tillie, stating she is attempting to embarrass her (Zindel 7). As the story progresses, Tillie and her teacher do an experiment by exposing man-in-the-moon marigolds to gamma rays. Tillie brings the marigolds home to chart their growth for a science fair project (Zindel 24). Tillie?s experiment takes her to the finals of her school?s science fair competition, yet as the evening approaches, Tillie?s mother decides not to attend (Zindel 89). Tillie goes on to win the science fair without the support of her mother (Zindel 99).

What needs to be taken from this story? Tillie, a girl who loves science, never has the support she should be receiving from her family. If minorities are going to thrive in the field of science, student support is necessary. Family members, as well as teachers and other education faculty must be encouraging.

Bertolt Brecht wrote the play, Galileo. The play is set in the seventeenth century, a time when the concept of women in science was unheard of. The play began with Galileo in his lab having a discussion about the planets with the son of his housekeeper (Brecht 47). Galileo then moved on to involve the curator of the local college paying a visit (Brecht 50). Galileo wanted more funding, but the curator refused (Brecht 53). As a result, Galileo had to tutor students to make ends meet (Brecht 52). As the play developed further, Galileo and his student made discoveries of the heavens and took these findings to the church (Brecht 59). Galileo was confronted by much questioning, which mainly involved the question of why he would go against the Bible and make such accusations (Brecht 79). Eventually, Galileo was placed under permanent house arrest for consistently defying the church (Brecht 116). However, his findings did not remain locked up by the church. In the end, Galileo rewrote his discoveries, and gave them to a student to introduce in Amsterdam where scientists were allowed to express new ideas or concepts freely without opposition from the church (Brecht 122). What can be taken from this story? First, nothing, not even the church, can stop a scientist from experimentation. Second, and most important, the issues of discrimination in science were an even larger concern in the seventeenth century. During this period in history, women involved in activities other than housework and child raising was unheard of. It can be noted that none of the women in the play ever played a role in the science or experimentation that occurred during the play. However, over time, women and other minorities have found their way into the field of science.

Alan Beyerchen believes that Galileo provides the ?potential new foundation for social interaction? (354). Beyerchen also believes ?man has not yet established a society based on reason, justice or social consciousness. They have allowed themselves to be ruled by emotion, and quite literally, thoughtlessness? (354). These thoughts show that there were many social issues to deal with during the seventeenth century, and with the high emotional levels of men, the issue of women in science would not be cleared up for many years to come (Beyerchen 354).

Another area of science that is under heavy fire is the area of academia. ?In 1993 European-American men made up 58 percent of all full time faculty,? state Misra, Kennelly, and Karides (216). If a person were to compare this to the 28.4 percent of European-American women making up this field, the results show a white male-dominated field (Misra, Kennelly, and Karides 216). Now add to these numbers the different minority groups. Asian men comprised 3.9 percent of the faculty, Asian women 1.3 percent, African-American men 2.7 percent, African-American women 2.4 percent, Latinos 1.8 percent, and Latinas a staggering 0.9 percent (Misra, Kennelly, and Karides 216). The numbers truly show a white male-dominated field.

While discussing the area of science academia, it is important to understand the minority distribution in the different teaching areas. Misra, Kennelly, and Karides state, ?In 1993 women composed 49.6 percent of all full time lecturers and instructors, 42.1 percent of assistant professors, but only 17 percent of full time professors? (216). It is believed that the cause of this statistical range is due to the fact that women are hired at the assistant level, denied tenure, and replaced by other women at the assistant level (Misra, Kennelly, and Karides 216). This is a tough concept to deal with, but it is true. However, the numbers decline even more when looking at other minorities in the academia field. According to Misra, Kennelly, and Karides, in 1992, minorities composed 16 percent of all professors, 10 percent of all associate professors, and less than 9 percent of all full time professors (216). When looking at these numbers, one can?t help but see a downward spiral for minorities in the science field.

A woman choosing to teach within the field of science academia is uncommon. ?Women?s representation declines with the prestige of the institution: 37.9 percent in public two-year schools, 28.9 percent in the public comprehensive schools, and 19.5 percent in private research universities,? state Misra, Kennelly, and Karides (217). These numbers justify further the domination of white males in the science field by showing the percentages stated above.

NASA was formed by John F. Kennedy to explore space. It is amazing to know that white males even dominate the ?Race to Space.? ?As of May 2, 1993, 180 Caucasian men and 21 Caucasian women, six African-American men and one African-American woman, three Hispanic men and one Hispanic woman, and two Asian men had been chosen to represent our nation in space,? state Bray, Jaap, and Meyer (1). Minorities are being dominated in every science field, and it is hard to imagine anything that can be done to reverse these effects.

One large factor working against discrimination in science is the resident population of the United States. As of November 1, 1999, approximately 36.5 percent of the population in the United States was composed of white males, and 37.8 percent of the population was composed of white females (Yax 1). The numbers decreased when looking at African-Americans and Hispanics. The estimated resident population fell to approximately 5.5 percent African-American males, and 6 percent African-American females (Yax 1). The numbers dip slightly lower when looking at the resident Latin population. The United States population consists of approximately 5.3 percent Latin males, and 5.2 percent Hispanic females (Yax 2). If a person takes another step in the downward population, it can be noted that 1.7 percent of the population in the United States is composed of Asian males, and 1.9 percent of the population is composed of Asian females (Yax 2). Now, if a person compares these statistics to the divisions of minorities in the field of science, the percentages do not look as bad. The best statistic to look at is the correlation between the percentage of Asian-American women in the United States, and the number of Asian-American women in the field of science. 1.9 percent of the United States population is composed of Asian-American women, and 1.3 percent of full time faculty positions in colleges and universities are held by Asian-American women (Misra, Kennelly, and Karides 216; Yax 2). At first glance, these numbers appear equal. However, one needs to look at the proportion of white males. White males make up 36.5 percent of the population in the United States, but they fill 58 percent of the science academia positions (Misra, Kennelly, and Karides 216; Yax 1). The percentage of white males in the field of science compared to minorities is still alarming, even by looking at the ratio of population to positions held.

So what is being done in the United States to attempt to fix the problem of discrimination? Organizations have begun forming to help address these issues. The National Action Council for Minorities in Engineering (NACME) is one such organization (Campbell ?NACME? 1). NACME is a not-for-profit organization whose mission is to increase the representation of African-Americans, Latin-Americans, and American Indians within the field of engineering (Campbell ?NACME? 1). The organization provides this through partnerships with industry, government agencies, and the educational community (Campbell ?NACME? 1). NACME assists government agencies and educational groups through analyzing and advancing public policies, developing and operating pre-college and university programs, and developing awareness training programs to aid students and mentors to better address the issues of discrimination and attempt to provide a stronger future for minority students (Campbell ?NACME? 1). NACME also provides scholarships each year for minority students (Campbell ?NACME? 1). It is estimated that approximately 10 percent of minority students receive scholarships from NACME (Campbell ?NACME? 1).

Another organization formed to address the issues of minorities in science is located on the campus of Texas A&M University. Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) was formed in an attempt to increase the number of minorities studying agriculture and related fields at the undergraduate and graduate level (Osadebe and Jones 1). The organization assists students in developing leadership, communication, and professional skills (Osadebe and Jones 1). The ultimate goal is to create a stronger bond between students, faculty, staff, and administrators (Osadebe and Jones 1).

Organizations are helping address the problem of minorities in science, but what is the government doing? The United States passed the Advancement of Women and Minorities in Science, Engineering, and Technology Act on October 16, 1998 (White 11). This bill established a committee to study the issues and barriers which women, minorities, and the disabled face in science and engineering (White11). After reviewing these problems, committee members then attempted to find solutions to these problems (White 11).

Science is a field that looks to explain the world around us. Diversity is a tool used to hold the world around us together. Without diversity within the professional positions of science, how can the field of science hold together? Continued steps need to be taken. Opportunity at all levels of science is necessary for minorities to advance. Until proper measures are taken, white males will continue to dominate the top positions in the science field, and the number of minorities graduating with science degrees will continue to decline. Equitable diversity must be the common goal.