

Classroom Use of Narrative and Documentary Film Leads to an Enhanced Understanding of Cultural Diversity and Ethics in Science

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Abstract: For a first-year seminar, *Windows on Science*, the authors developed a cooperative learning activity around film designed to meet two of the campus-wide Principles of Undergraduate Learning. The teaching method utilizes the power of storytelling by screening narrative and documentary films. In the process, the methodology helps students to realize the contributions of many cultures, specifically African Americans, to our knowledge of science and the advancement of scientific methodology. Additionally, students are exposed to issues that focus on ethical conduct in the sciences and that provide an opportunity to discuss the leadership role that women have played in advancing science and technology. A pedagogical approach using narrative and documentary film in a freshman science course is an effective means for promoting an understanding of the endeavors and contributions of minorities and women in science, and for developing an increased awareness of issues concerning diversity and ethics.

Key words: African Americans, Science Instruction, Science Education, Multicultural Education, Ethics, Identity Concept, Narrative Theory, Documentaries, Films, Scientists, First Year Seminar.

INTRODUCTION

Indiana University - Purdue University Indianapolis (IUPUI) is an urban campus with over 200 programs and an enrollment of 30,000 students. Since 1996, the School of Science has required entering freshman to take a first year seminar course called *Windows on Science*. This course is intended to guide students along the pathway to success and at the same time introduce them to significant historical events and challenges that have had an impact on science. IUPUI has adopted six Principles of Undergraduate Learning (PUL) that have been integrated across the IUPUI curriculum (Hamilton, Banta and Evenbeck, 2006). PUL 5: Understanding Culture and Diversity and PUL 6: Values and Ethics are key components of the exercise described here. The sections of the *Windows on Science* taught by the authors each had a total of 20 to 30 biology students with an additional 3 or 4 students pursuing other science majors. The method has been employed for 6 semesters.

To facilitate the process of teaching cultural diversity and ethics in the context of science we have instituted a novel approach that combines: 1) development of a central prompt (Andrews, 1980); 2) multicultural science education goals; and 3) media and communication research on character identification concepts and narrative theories related to the power of film to transform (Cohen, 2001; Kozloff, 1987).

A literature review in the Education Resources Information Center (ERIC) index indicates the use of teaching methods integrating narrative and

documentary films in primary, secondary and higher education is a ubiquitous practice in the humanities and social sciences. Moreover, a review of the literature covered by the General Science Abstract Index failed to find any reference to the use of both narrative and documentary films on the same topic, such as, *Something the Lord Made* and *Partners of the Heart*, to facilitate classroom discussion on the understanding of cultural diversity and ethical values in science.

Both of the aforementioned films are based on the story of Mr. Vivien Thomas, an African American who pioneered and taught heart surgery procedures at Johns Hopkins Medical School. When viewed together these films provide a unique opportunity to highlight the multicultural aspects of science and medicine, while at the same time providing a context in which to discuss the contribution of minorities, women and ethnic groups to the advancement of science. Using narrative and documentary films about the life of Thomas is not only innovative in the science curriculum; it provides two distinct approaches to the topic, each with their own effects on viewers. The narrative film takes advantage of the concept of identification, according to which viewers strongly empathize with the protagonist and temporarily assume his perspective and goals. (Cohen, 2001; Kozloff, 1987). The veracity associated with the documentary film appeals to viewers' sense of rationality and truthfulness as the film informs and makes a case for the accomplishments of Thomas.

The originality of the teaching method and its use in *Windows on Science* is strengthened by

Southerland (2000) who argues that science instruction and diversity education – multicultural science education – should pay particular attention to portray science as a human endeavor influenced by the culture in which it was developed. She continues by arguing for the introduction of the history of science, particularly biographies of individual scientists or a personal recounting of the development of specific theories, which can help students understand the influence of culture on the doing of science (Yost and González, 2008)

PROCEDURE

The complete exercise described here takes place over two class periods of 1 hour and 50 minutes each. The first period utilizes storytelling through film, and it is focused on Mr. Vivien Thomas' experiences at Johns Hopkins. The film includes highlights of his time working as a research technician in Dr. Alfred Blalock's research laboratory as well as the time he spent in other areas of the hospital. The exercise does not include information on his experiences when he was initially hired and worked in Blalock's laboratory at Vanderbilt University. The presentation does make it clear that although he was working as a lab technician, he was receiving the salary equivalent to that of being a janitor. Interestingly, Mr. Thomas's creativity can be related to his original career path as a carpenter.

In order to convey the disenfranchisement of Mr. Thomas' achievements, leading up to the overwhelming recognition for Dr. Blalock's success as a pioneer in open heart surgery and specifically the treatment of blue babies, chapters 3 through 13 of the narrative film *Something the Lord Made* are shown. Showing these chapters requires about 1 hour of class time. Chapter 3 opens with Thomas mopping the floor in the science laboratory, while the remaining chapters continue to unfold as a dramatic storytelling of friendship, genius, and courage while also providing some insight into the racial and social norms among hospital staff, patients, and medical personnel at that time. Chapter 13, which completes this portion of the exercise, shows Thomas summarizing his place in the many achievements for which Dr. Blalock was internationally recognized (e.g., that Thomas has been invisible).

Prior to showing *Something the Lord Made*, the instructor tells the students that they will be viewing a historical event that occurred prior to the civil rights movement and at a time when a significant racial divide existed in the United States. The students are given the assignment of identifying and listing a minimum of ten ethical issues they observe while viewing the film. The students are prompted that the issues are not limited only to the racial divide and that they may also observe ethical questions related to scientific and personal conduct that occurs in the film (Andrews, 1980).

Following the screening, the students are placed into groups and instructed to discuss the observations they made while viewing the film. After calling the class back together, the instructor asks each group to report out to the class. As each group responds, the instructor organizes the observations into categories on the white board. The class is then asked to consider which of these ethical issues have been resolved over the course of time and how they were resolved (e.g., legislation, institutional committee review). If the class feels that an issue has not been resolved, which in our experience occurs very rarely, the students are asked to describe why they think this non-resolution is the case and to offer a way to resolve the issue. Following the discussion on resolution, the class is dismissed and told to bring their list of ethical issues illuminated in the film to the next class.

During the second class, the documentary film *Partners of the Heart* from the PBS *American Experience* series, is shown. Viewing the documentary film compliments the narrative film with the power of eye witnesses sharing their feelings and recollections of the remarkable relationship between Mr. Vivien Thomas and Dr. Alfred Blalock. The exercise begins with Chapter 2 titled *Johns Hopkins*. This segment unfolds with Mr. Thomas and Dr. Blalock's arrival in Baltimore, Maryland in June 1941. Dr. Blalock begins his appointment as Surgeon in Chief at Johns Hopkins University, School of Medicine. What awaits Mr. Thomas is continued racial segregation in Baltimore and Johns Hopkins Hospital. Chapter 3 is titled, *Blue Babies*. Here Dr. Taussig, a heart specialist at Hopkins, introduces Dr. Blalock to the idea of a surgical solution to the heart defect commonly referred to as Blue Babies. With the success of the Blue Baby operation, they open the door to heart surgery once considered impossible. Chapter 4 titled *The Journey*, tells the story of the most famous surgical department in the world. With Dr. Blalock's pioneering achievements comes worldwide recognition, while Mr. Thomas' contributions remain undiscovered – invisible. The documentary concludes with chapter 5, *Recognition*. Revealed are the positive results of the civil rights movement to end racial inequality throughout America and Johns Hopkins. In the midst of these dramatic historical events Mr. Thomas' long awaited recognition and contribution to cardiac surgery are realized. Showing these chapters requires about 45 minutes of class time.

Partners of the Heart is a powerful and dramatic documentary that combines historical film footage with interviews of patients, staff, interns, medical doctors, family and friends of Mr. Thomas and Dr. Blalock. The interviews provide personal insight into the pioneering work of Dr. Blalock and Mr. Thomas and an indication of the social constraints of the times in which they lived. These individuals express

sadness over the events of the past and at the same time express gratitude in recognition of Thomas' significant contribution to the fields of heart surgery, the development of unique surgical instruments, and the teaching of surgical procedures to medical interns at Johns Hopkins. The film also addresses the positive impact of the civil rights movement in opening the doors for minority students and women to enter and train in professional schools, such as Johns Hopkins Medical School.

Additionally, *Partners of the Heart* clearly shows the significant contribution of Dr. Helen Taussig, a pediatric cardiologist, in developing a surgical shunt to alleviate the problem responsible for causing the blue baby syndrome. These patients were of particular interest to Dr. Taussig and she was very interested in finding a solution to this fatal medical problem. The recognition of Dr. Taussig in the documentary film makes a good connection back to *Something the Lord Made*, a film that makes it clear that the development of the shunt was ultimately accomplished by Taussig's surgical colleagues at Johns Hopkins, Thomas and Blalock. For their success, Dr. Blalock received many personal accolades that included nine honorary degrees. The shunt was initially called the Blalock-Taussig shunt. It was later renamed the Blalock-Taussig-Thomas shunt (Brogan, 2003).

Prior to viewing *Partners of the Heart*, students are instructed to refer to the list of ethical issues they made while viewing *Something the Lord Made*. After screening *Partners of the Heart*, the students are asked to identify any resolutions they observed to the issues they listed while viewing *Something the Lord Made*. A comparison is then made between the resolutions discussed at the end of the first class and those that were identified in *Partners of the Heart*.

DISCUSSION

The classroom presentation of the story of Mr. Vivien Thomas through both a narrative and a documentary film engages students through two distinctly different presentations using the same medium. The screening of the narrative film, *Something the Lord Made*, anticipates an engagement on behalf of students largely through empathy and character identification. The allegorical world of narrative film invites audiences to momentarily forget themselves and assume the perspectives and emotions of various characters, in this case those of Thomas (Cohen, 2001). Consequently students can form strong empathetic and emotional bonds by identifying with the Thomas character as he challenges the racial conventions of the period and the conventions of the medical establishment (both in terms of the procedures he is pioneering and the medical credentials expected by the profession). The narrative depiction of this story provides a dramatic

account that strongly appeals to an audience's sense of compassion, justice, and equality.

The screening of the documentary film, *Partners of the Heart*, engages students through rhetorical strategies that give the impression of fairness and accuracy (Nichols, 2010). This type of biographical or commemorative documentary is built on fact and presented with a degree of detachment from the subject. Yet a strong emotional effect is also achieved through the participation of people who have first-hand knowledge of Thomas and who express poignant stories and heartfelt feelings.

Through the combination of emotional engagement, character identification and the persuasiveness of the rhetorical strategies of documentary that present primary material and emotional testimonies, students are presented with a comprehensive depiction of Vivien Thomas's story as it embodies the themes of the course. The goal of this pedagogical approach is to help students consider and understand the value of diversity as they themselves aspire to participate in a historically exclusive field. This inspiring story focused on a specific part of Thomas' life, as presented in two different modes of filmmaking, makes a highly effective presentation to achieve this goal.

In summary, Table 1 provides an overview of the consensus responses related to major ethical and diversity concerns observed while viewing the narrative film *Something the Lord Made*. Table 2 highlights responses regarding what society has done to resolve some of the concerns noted in the aforementioned table while viewing the documentary film *Partners of the Heart* and the accompanying in-class discussions. In the end, this activity provides a range of possibilities for discussing ethical and cultural issues in the sciences. In particular, it enables students to develop a broader more sensitive

Table 1: Consensus ethical issues noted while viewing *Something the Lord Made*

Lack of credit given to Vivian Thomas	From experiments to humans too fast
Food, alcohol, and coffee in the lab	Pay inequity
Issues of religion vs advancement of science	Mistreatment of women scientifically
Racial segregation	Procurement of experimental animals
Mistreatment of African Americans	Uninformed consent for operating on baby

understanding of the power of inequality on society, culture, race and gender when determining who receives credit for discoveries, inventions or contributions made by individuals within a team. Additionally the authors felt this method achieved a

goal of providing a vehicle for a deeper appreciation of the historical disenfranchisement of minorities and women in the sciences and in medicine in particular.

Table 2 Resolutions discussed that address issues in table 1

Vivian Thomas receives recognition
Institutions have formed animal care committees
Institutions have formed safety committees (SRCs)
Institutions have formed review boards (IRBs) for experimentation and patient consent forms
Civil rights legislation and other laws have been passed
Gender equity has or is being addressed across the country
Eating and drinking in research labs has been banned
Conditions in the operating room have improved
Patient care has advanced

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