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# Is the Role of a Professor Gender-Inclusive in His Classroom?

Alejandro Jose Gallard-M[1] and Evrim Genc-Kumtepe[2]

[1] Science Education, Florida State University

[2] Distance Education, Anadolu University

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Abstract

Can we assume that because someone is intellectually aware about gender-inclusive pedagogy they will actualize this awareness in their classes? No, for that reason, the aim of the current study is to explore and widen an understanding whether an individual can walk the walk as well as talk the talk. This is a qualitative study in nature, conducted in the summer of 2005, of a Professor of Science Education's attempts to make his classes gender-inclusive. Methods used to gather data for this study were a combination of action research and case study techniques. Accordingly, classroom observations, field notes, interviews, and journals were the primary sources of data. Preliminary findings indicate that the professor's teaching efforts are more gender-neutral then gender-inclusive. The inclusion of multiple reflections and truths in a higher education class could help students understand other people's values in society and improve the quality and accessibility of science education.

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## Theoretical Background

In recent years, there has increasingly been a movement to prepare science teachers to be aware of issues relating to gender inequities in science classrooms (Brickhouse, 2001; Brickhouse, Lowery & Schultz, 2000; Calabrese Barton, 1998; Ropers-Huilman, 1998; Weedon, 1997, 1999). Current reforms in higher education, particularly in science, have called on educators to develop alternative instructional strategies that are sustainable within new contexts (George & Van Home, 1998; Zevenbergen, 1999). New approaches to teaching should also reflect equitable practices, not favoring one group over another.

In other words, teaching and learning science should accommodate various students' needs, interests, and experiences and serve to promote awareness and appreciation of cultures and differences (AAAS, 1998; NSES, 1999). Equitable instructional strategies in this paper refer to those practices that make science inclusive of some while exclusive of others especially when gender is considered.

This can be referred to as gender-inclusive pedagogy in education (Rennie, 1998, p.956). Gender-inclusive pedagogy includes understanding that the teaching and learning of science does not take place in a vacuum. To the contrary, it takes place in a complex context of cultural, economic, political, and social events that have their own history and interconnectedness (Calabrese Barton, 1998). Part of this contextual complexity is one's life history, which also includes cultural, economic, political, and social events and the tension between teaching and learning science. Thus time and space of one's life is positional. Positionality, as a concept, helps us to understand that teaching and learning science is relational (the complexity and intertwining of one's life experiences), dynamic (constantly undergoing change), and political (race, class and gender do matter) (Calabrese Barton, 1998). Accordingly, there is a relationship between gender-inclusive pedagogy and the notion of positionality. "Positionality plays a key role in the development of a feminist science education." (Calabrese Barton, 1998, p. 30). This speaks to the notion of starting with what the student knows.

Experience with gender-inclusive pedagogy would assist science teachers to create an environment for their classrooms that enables all students to develop their abilities and talents to the fullest. Ropers-Huilman (1998) in separating feminist teaching from traditional education argues that:

> The combining of feminism and education has the potential to be subversive-encouraging not just "exposure" to concepts, but participation experiences that could change participants' perspectives. This combination can encourage awareness that a dominant culture exists while pushing for an understanding of the subcultures that resist and support it (p. 19).

As role models, science teacher educators exert a significant influence on teacher candidates. It is crucial; therefore, that educators in science-teacher-preparation-programs be conscious of gender-related issues in science and prepare stimulating learning environments where all ideas are welcomed. Drafting and implementing such defined pedagogies into teacher education programs would directly be influenced by an instructor's personal beliefs, perspectives, and instructional practices. Furthermore, in some educational areas where females dominate the classrooms, a male teacher's gender-related effort is more of an interest to investigate (McGinnis & Pearsall, 1998).

## Purpose of the Study

This study attempts to examine the consistency between an intellectual awareness of gender beliefs and pedagogical practices of a male professor teaching both science content and method courses in predominantly female classes and his actual practice. The central research question for this study is: "how does a male professor of science education interact with female students in a graduate level course? In other words:

- Is awareness of gender issues in the teaching and learning of science from an intellectual perspective different from an internal reorganization of one's beliefs about the same?

- Can internal reorganization of one's beliefs lead to a more gender inclusive pedagogy in the classroom?

The following questions assisted us in assessing and describing the professor's interaction with female graduate students who are practicing or will be practicing science teachers:

a. What has the professor learned about teaching females since his involvement in gender research?
b. Is his approach gender-inclusive? How? If not, why not?

We believe that a close examination of one's beliefs and actions considering gender issues in teaching would be beneficial in revealing whether one not only talks the talk but walks the walk.

## Methodology

Gender beliefs are generally viewed as unspoken and difficult to measure constructs (Garrahy, 2003). This study utilized a qualitative research approach to examine a male professor's personal beliefs about gender and compare those beliefs with his current practices in the contexts of his teaching. Assessing personal interpretations and meanings yields specific insights to inspect silent dynamics that can either block or contribute to the applied instructional strategy as well as to portray the interaction of one's behavior and action in a particular setting.

The research process of the study can be defined as action-oriented research (Gore & Zeichner, 1995; Patton, 2002; Tomal, 2003). Action research is also one of the

research techniques in feminist research in education (Berge & Ve, 2000; Hollingsworth, 1997). It has been argued that gender issues are more complicated; for that reason we need to "deepen the understanding of different voices as a basis for action and change" (Berge & Ve, 2000, p.5). Action research takes on specific places at specific points of time and typically does not attempt to generalize beyond those specific settings (Patton, 2002). It only focuses on particular issues and interpersonal interactions among research participants to explain issues by studying themselves.

In this study, the male professor's sense of interest in his own teaching in female-dominant classes, whether it is gender-inclusive or not, is a starting point. In other words, the professor will be sharing his own unique experience via his actions and narrative-way of thinking. It is believed that applying action research process enables the researcher not only to characterize the professor's instructional strategies but also to improve his practices by interpreting his own reflections and actions on gender issues. Action research is a process of making sense of one's experience (Burnaford, Fischer, & Habson, 2001) as well as a research methodology (Tomal, 2003). It is emphasized that a reflective teacher is a more effective teacher (Grant & Zeichner, 1984) since reflection is a guide to better action (Schon, 1983).

The interpretive case study approach will also be employed. Case study refers to "the study of particularity and complexity of a single case, coming to understand its' activity within important circumstances" (Stake, 1995, p.xi). A qualitative case study approach allows researchers, in the role of an educator as an action researcher, to examine instructional activities in depth and detail and to interpret personal constructions within the specific context (Järvinen, 2001). In the same vein, with this study, our

intention is to portray a male professor's personal beliefs about gender issues and to investigate their reflections in his authentic teaching activities within a real-classroom context (Yin, 2002). In order to achieve this goal, we need to concentrate on specific instances and interactions in his science method and content classes. Throughout the process, the professor's belief structure and its influences on instruction will be displayed, incorporating both his and the co-researcher's interpretations. The unit of analysis, in this case, is the interaction of the male professor's gender beliefs and actions in science teacher education classrooms.

*Data Collection and Analysis*

A multiple data gathering procedure was employed in this study to enhance the credibility of the research (Patton, 2002). As a part of this study, one of the researchers conducted interviews with the professor and female students in his graduate classes. A semi-structured format was used to conduct interviews, thus allowing the interviewee the opportunity to express opinions through discussion. The professor's interview focused on his sense of perception of gender issues in education, and his teaching philosophy and its relation with the feminist philosophy. Student interviews were conducted either individually or in a small group. The co-researcher presented the context of the study and asked them to reflect their views on gender, how they perceive its role in education, and the professor's teaching style regarding his gender-inclusive/exclusive instructional strategies. All interviews were audiotaped and transcribed. The co-researcher also

observed the professor in his science content and method classes during the summer of 2005, taking field notes.

Throughout the process of data collection, the professor's self-reflection notes (journals) will be used to describe his role in a female-dominant program, his instructional goals, frustrations, satisfactions, strengths and weaknesses about his teaching considering gender issues. Gordinier and Conway (n.d.) reported that "more effective reflections must occur in conjunction with field experiences" (p.10). Moreover, they stressed that reflective thinking plays a critical role in teachers' professional development since it allows them to take a more personal ownership of the thoughts expressed in the field reflections.

This descriptive phase of analysis captured several steps as classifying and coding qualitative data, producing a framework, and organizing and describing data collected through field observations (Patton, 2002). During the analysis stage we made comparisons based on the professor's stated beliefs about gender and corresponding actions, extracted meanings from the data, and drew conclusions. Findings will be presented through interpretive assertions supported by evidentiary examples taken from multiple data sources.

## Findings and Educational Importance of the Study

The preliminary analysis of the field notes portrayed a quite optimistic picture of the science teacher professor's classes that seemed to be built on "a notion of the shared-authority" and "a gender-neutral pedagogy" to education. The interactions among the

primary players of this study-a male professor and his four students: Helen, Mary, Kate, and Tom- produced that he wanted his students to be critical thinkers and the class environment he created allowed them to speak up and be heard. The majority of the classroom interaction was based on learner participation. I, as an outside observer, saw his position himself as one of the productive members of the class in all those class discussions. He also endorsed gender-blind pedagogies when he encouraged "all" students to be communicative and to question fabricated-truths that for the most part are never critically questioned. For example, "What/why do you think, Helen?", "Tom, what is your perception or experience on this?", and "Kate, is it your definition or textbooks' definition?" were central questions in one of his lessons. He seemed to believe that this was an effective way to start a general class discussion about any topic. As a result, students found frequent opportunities to explore not only their stances on various issues in science education but also commonalities and discrepancies between their realities and the realities of the community that they live in.

It was not easy for me to follow his actions, arguments, and interactions with the students because his teaching methods created a spontaneous and astatic environment, while at the same time the learning setting for all students was relaxed and safe. During class observations, every step he and his students took, every moment they challenged, and every silence they kept, made me think and rethink my own identity as a woman student in this department, position as a woman researcher in this class, and reality as a woman in this society. I believe, as an outside observer, the professor's way of teaching invoked the same type of questions in his students'.

*Implications*

The inclusion of multiple reflections and truths in a higher education class could help students understand other people's values in society and improve the quality and accessibility of science education. Furthermore, discussing political, cultural, and institutional approaches to science and education is essential for making preservice/ inservice teachers aware of historical and contemporary issues in science. All these practices, therefore, should empower them to create a democratic and equitable atmosphere for future classrooms.

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