

ABSTRACT

HOLMES, SHAWN YVETTE. Ethical Sensitivity Intervention in Science Teacher Education: Using Computer Simulations and Professional Codes of Ethics. (Under the direction of Leonard Annetta).

A simulation was created to emulate two Racial Ethical Sensitivity Test (REST) videos (Brabeck et al., 2000). The REST is a reliable assessment for ethical sensitivity to racial and gender intolerant behaviors in educational settings. Quantitative and qualitative analysis of the REST was performed using the Quick-REST survey and an interview protocol. The purpose of this study was to affect science educator ability to recognize instances of racial and gender intolerant behaviors by leveraging immersive qualities of simulations. The fictitious Hazelton High School virtual environment was created by the researcher and compared with the traditional REST. The study investigated whether computer simulations can influence the ethical sensitivity of preservice and inservice science teachers to racial and gender intolerant behaviors in school settings.

The post-test only research design involved 32 third-year science education students enrolled in science education classes at several southeastern universities and 31 science teachers from the same locale, some of which were part of an NSF project. Participant samples were assigned to the video control group or the simulation experimental group. This resulted in four comparison group; preservice video, preservice simulation, inservice video and inservice simulation. Participants experienced two REST scenarios in the appropriate format then responded to Quick-REST survey questions for both scenarios. Additionally, the simulation groups answered in-simulation and post-simulation questions. Nonparametric

analysis of the Quick-REST ascertained differences between comparison groups.

Cronbach's alpha was calculated for internal consistency. The REST interview protocol was used to analyze recognition of intolerant behaviors in the in-simulation prompts. Post-simulation prompts were analyzed for emergent themes concerning effect of the simulation on responses.

The preservice video group had a significantly higher mean rank score than other comparison groups. There were no significant differences across the remaining groups. Qualitative analyses of in-simulation prompts suggest both preservice and inservice participants are unlikely to take action in an intolerant environment. Themes emerged in the post-simulation responses indicated participants viewed the simulation as a reflective, interactive, personal, and organic environment.

Ethical Sensitivity Intervention in Science Teacher Education: Using Computer Simulations
and Professional Codes of Ethics

by
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DEDICATION

To my father, John Hazel Washington, who died it seems so long ago, I named the virtual environment in this study, Hazelton High School, in his honor. To my husband, Jeff, who has provided me space, time, support and gentle persuasion to take care of myself. To my mother, Frances, the most gracious, self-reliant, authentic person I know, thank you for being my role model. My son Trent, your presence spurs me on, just be.

BIOGRAPHY

The journey has not been straight however the twists and turns have provided Shawn unparalleled experiences that have fed her desire to teach. Shawn Yvette is the youngest of three girls born to John and Frances Washington. She grew up in Philadelphia and her love for learning started before the first grade. Frances convinced the school principal to allow Shawn to start a year earlier than recommended. She enjoyed school and played the violin and read for after-school activities. School had always been a comfortable place for Shawn. At Germantown High School, Shawn was active in student government, the magnet program, a member of the Historical and National Honor Societies, and was awarded the most outstanding science student (a four year distinction). She was a majorette and received varsity letters as a sprinter on the track team. Shawn was encouraged by her high school biology teacher and in the 10th grade enrolled in a college program and became certified as a Laboratory Animal Science Technician.

After graduating in 1976 Shawn attended Delaware Valley College of Science and Agriculture majoring in animal husbandry. Her plan was to enroll in a small college then transfer to an out of state university. She transferred to University of Texas at El Paso however she missed Philadelphia and returned to go to Temple University majoring in biology. With her biology degree she became employed at the Medical College of Pennsylvania, in a neuroscience research laboratory as an electron microscopist. With encouragement from the senior researcher she applied to Temple University School of Dentistry in 1986. Shawn's empathic nature was sought out to treat HIV infected, AIDS, and

other medically comprised patients in the Infectious Disease Clinic; there she became interested in treating the whole patient. For her expertise and dedication she received the Oral Medicine award for outstanding achievement. After graduating in 1990 she was accepted in the General Dentistry Residency Program at the Veterans Administration Hospital in Philadelphia. Upon finishing she returned to Temple University as an Assistant Clinical Professor in the Oral Medicine and Radiology departments where she gave clinical instruction to third and fourth year dental students. It was this experience coupled with being the supervising dentist at area dental hygiene programs that convinced Shawn she had intuitive skills in clinical teaching.

As well as being a general practitioner, Shawn treated nursing home patients and volunteered for a medical mission in Ghana and Liberia, West Africa, however it was working with students that drew her away from dentistry and back to school. She received a M.Ed. in multicultural education (2001) from Eastern University in St. David's, PA and taught biology, AP biology, health related occupations, earth, physical and life science in public schools in Philadelphia, and Orange and Long Beach, CA. Her teaching still had a clinical nature. She wanted to see and hear how her students were processing the information. She built relationships and held them to high expectations. She was recognized as a leader in her school district and was asked to share her teaching experiences with preservice and beginning science teachers. The desire to live elsewhere led her back to the east coast where she and her husband bought a home in Raleigh, NC. Shawn enrolled in the Ph.D. program at North Carolina State University in 2006. Her research aspirations have

since been fueled by Dr. Annetta and Dr. Reiman in teacher preparation, mentoring, and the use of emerging technologies as a vehicle for professionalism and professional ethics.

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The ability to acknowledge those who have contributed guidance and support is often overlooked in day to day interactions. There are several individuals who without their guidance and support this project would not been as successful as the author deems it to be.

My committee chair and advisor, Dr. Len Annetta, was exactly what I needed for this project. His ability to lead by dropping seeds of guidance, supported yet mostly challenged me to gain confidence and competence in my research endeavors. His quiet style juxtaposed with my checklist approach to everything provided an alternative yet welcoming way to accomplish goals. Len has listened, showed respect for my research and teaching passions, and provided guidance by asking seemingly simple questions that deepened my knowledge about research protocols.

I have had some of the most inspiring conversations with Dr. Alan Reiman; my minor research committee chair. Alan has a depth of knowledge and insight for moral development, mentoring, and the clinical practice of teacher preparation that I drew from consistently. His approach to teacher preparation was a natural fit with my teaching aspirations and laid the foundation for my work in professionalism and professional ethics.

The advising and teaching styles of Dr. Glenda Carter and Dr. Gail Jones, the other members of my research committee, have encouraged and influenced my teaching. Their individual advice about research and effective instruction has helped me to better understand the responsibilities of a university educator. I have observed and enjoyed planning and co-

teaching undergraduate science methods classes with Glenda and have watched Gail teach graduate education students; both provided teaching experiences that are of value to me.

Specific technical support provided by Dr. Annetta, Oliver Gray, Adam Carriker, Kevin Herndon and James Niehaus were critical to complete this project. I am very appreciative of the late night help I received from each of you. Where my technical skills were sparse you deftly filled in the gaps and as a result I became better.

I would also like to thank my husband, Jeff, who helped me in immeasurable ways. He has been the supportive force that has allowed me to succeed.

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CHAPTER ONE: INTRODUCTION

Representative Story

Miguel, a homeless 26 year old Puerto Rican father who lives in New York City with his wife and two children, eloquently and with clarity states his views of science, school science, his family and culture. He elaborates on how the school, his community and science were at odds. Miguel, born and raised in NY, is widely influenced by urban Puerto Rican culture. Through an ethnographic case study, Barton (2000) was able to open the door to Miguel's interpretation of how the 'culture of power' (Delpit, 1988) effected his school and life decisions. The collision of the culture of school science and his misunderstood family culture left him unsupported to pursue science as a vocation. He left school in his junior year recalling that he was not respected, was not challenged, and pushed towards a vocational track instead of taking even basic science classes. Miguel remained focused following his enthusiastic feelings and passion for the natural world becoming a self-taught herpetologist. His story and other untold stories illustrate how the colliding factors of institutionalized racism, the rapidly diverging student/teacher racial differences, teacher accountability, and misunderstanding the importance of the confluence of a student's culture, community culture and the culture of science can limit the acquisition of scientific literacy for students of color.

Miguel acknowledged differences in the qualities of schooling emphasized by his culture from the qualities valued in school. He understood the clashes and conflicts as a result of his family not supporting school values yet supporting values not recognized by the

school culture. This awareness led him to believe the differences between his home experiences and his school experiences limited his academic success and achievement (Barton & Yang, 2000).

Purpose of the Study

This study will illuminate how teacher education programs struggle to fulfill mandated diversity standards, while teachers are held accountable for implementing methods to teach and engage all students from a population that is rapidly diverging from the teacher racial population. These dynamics, coupled with a history of institutionalized racism (i.e., our education system) operate on an inferiority paradigm (Tate, 1997) leaving students of color in greater jeopardy as they struggle to become scientifically literate for the global market of the 21st century.

A review of current teacher education program responsibilities is followed by a brief description of recommended teacher obligations set forth by professional teaching organizations. The rapidly changing student demographics are used to illustrate how the racial inferiority paradigm noted by the critical race theory (CRT) may be manifested in today's attitudes about multicultural teaching. The Racial Ethical Sensitivity Test is a reliable measure assessing ethical sensitivity to racial and gender intolerance in school situations (Brabeck et al., 2000). The basis for utilizing the REST and creating a computer-based simulated version to influence perspective-taking are discussed. Using the REST and creating a new version are associated with the present ineffective integration of cultural

influences in the classroom. Ignoring the cultural mismatch between the student's culture and the culture of science has a limiting effect on the acquisition of scientific literacy.

The need for intervention in this arena is not new as several comprehensive multicultural teacher education programs exist and deliver results for affecting teacher beliefs and attitudes towards diversity (Bryan & Atwater, 2002; Downey & Cobbs, 2007; Fraser-Abder, 2005; Gay, 2002; Ladson-Billings, 2000; Villegas & Lucas, 2002). These studies show the importance and need for teacher education programs to develop curriculum which examines teacher's beliefs about student characteristics, external influences, and responses to diversity. However the implementation of these strategies is based on changing teacher beliefs as a way to affect their actions. A more direct and concrete strategy which benefits students more quickly, instead of attempting to alter teacher personal beliefs, is possible through perspective-taking and recognition of behavior that is not in alignment with school-based professional code of ethics. This study attempts to influence perspective-taking and teacher's responses to diversity based on professional ethics; an additive strategy to the existing multicultural teacher education curricular practices.

The endeavor is to change behavior circumventing emotional barriers that are present when trying to change belief systems (Brabeck et al., 2000). Encouraging tolerance by means of adherence to professional ethical codes sets a standard of fairness. This in concert with comprehensive multicultural teacher education programs may prove to be very effective for teacher perspective-taking, more efficient cultural "border crossing"

(Aikenhead, 1996) skills, and affecting the goals of science for all traditionally marginalized students (AAAS, 1989).

The aim of this study is to suggest a different approach for multicultural teacher education programs. By harnessing the perspective-taking power of computer-based simulations and emulating the traditional REST instrument, the goal of this study is to determine if computer-based simulations can be a useful tool for affecting preservice and inservice teacher's ethical sensitivity to instances of intolerance towards culturally and linguistically diverse students as measured by the REST. Research questions solicit a comparison study of the traditional REST and the newly developed computer-based simulated REST.

Research Questions

To reach this end the following questions will be investigated by this study:

- 1) Can a computer simulated environment affect a preservice science teacher's ethical sensitivity to instances of racial and gender intolerance when compared to the traditional REST-CD?
- 2) Can a computer simulated environment affect an inservice science teacher's ethical sensitivity to instances of racial and gender intolerance when compared to the traditional REST-CD?

Hypotheses

- 1) Preservice teachers who complete the study using a computer-based simulation of the REST will have an affect on their ethical sensitivity score.

Null hypothesis: Preservice teachers who do not complete the study using a computer-based simulation of the REST will not have an affect on their ethical sensitivity score.

2) Inservice teachers who complete the study using a computer-based simulation of the REST will have an affect on their ethical sensitivity score.

Null hypothesis: Inservice teachers who do not complete the study using a computer-based simulation of the REST will not have an affect on the ethical sensitivity score.

Significance of the Study

To link issues of racial and gender intolerance to existing professional education codes of ethics, open the discussion of racial intolerance in education programs, and prompt science teachers to act in ethically sensitive ways by recognizing intolerant behavior from the student perspective, a computer-based simulation was created using two REST scenarios to enhance perspective-taking and affect ethical sensitivity. In an attempt to affect REST scores a simulated-REST version was created using the software interface, *Virtuoso*, developed at North Carolina State University. *Virtuoso* was designed to use the proprietary Half-Life 2 game engine. Computer-based simulations are immersive, influence perspective-taking (Macedonia, 2002) and can make the experience more active versus the passivity of viewing a video. In the REST computer-based simulation the participant assumes a role and takes the perspective of an education professional in the scenario thus affecting a component of moral development, ethical sensitivity. The computer-based

simulated REST situates the teacher in a professional ethical dilemma in an attempt to influence perspective-taking aiming to influence recognition of racial and gender intolerant behavior. Thus, the significance of this study lies in the affective gain in science teacher ethical sensitivity with special attention paid to their ability to take the perspective of their students and identify instances of racial and gender intolerance. Ladson-Billings (1995) defines culturally relevant pedagogy from the student perspective. This strategy along with existing multicultural teacher education programs has the potential to increase the ethical sensitivity of science teachers, influence teachers to act in accordance with their professional code of ethics, reduce the challenges of divergent student/teacher racial differences, and increase the acquisition of scientific literacy for students of color.

Limitations of the Study

This study aimed to influence science teacher recognition of intolerant behaviors in school settings, specifically racial and gender incidences. A sample of 63 preservice and inservice science teachers participated in the study. The sample was largely female (69% preservice and 77% inservice) and Caucasian (91% preservice and 87% inservice). One limitation of the study was the inability to secure a more diverse sample.

The technical expertise of the researcher was a limitation of the study as well as the usability of the *Virtuoso* software. The learning curve to achieve proficiency was steep. This study took place during the prerelease testing phase of *Virtuoso*. In other words, the researcher was a major beta-tester, identifying significant “bugs” which affected the functionality of the software. Technical problems with *Virtuoso* were why a specific

information sheet was given to each participant. The gaming proficiency of the participants was not determined. This can be a limitation because someone adept in a virtual environment due to their experience with video games may perceive the simulation favorability. Whereas someone with less video game experience may find the experience frustrating.

Virtuoso only operated through an online software distribution platform and was downloaded to a set of laptops. Participation in the simulation portion of the study required access to the internet and use of the specific set of laptops. As a result the simulation group was not randomly assigned. Participants at testing locations where the internet was inaccessible were automatically placed into the video comparison group. On one occasion a participant was at an internet accessible location however technical problems with *Virtuoso* or the software distribution platform dictated they view the video instead of participating in the simulation. A simulation operating without an online software distribution platform would have been more widely accessible and possibly increased sample size.

The immersive qualities added to the simulation to influence recognition of intolerant behaviors were limited by the capabilities of *Virtuoso*. For example, it was very important to control participant line of vision during specific portions of the simulation. It would have been counterproductive to have a participant looking around or exploring another aspect of the virtual environment when a significant conversation between virtual characters was taking place. The ability to “freeze” player movements was not a functionality of *Virtuoso* until it was needed for this project. Likewise, incorporating

multiplayer capabilities might have influenced participant interaction however this function was in the development phase at the time of this project. The decision was made to maintain single player capabilities to better compare with the REST video assessment.

Lastly, a limitation and area of future work lies in the methods. The simulation group answered in-simulation questions however the video group did not answer corresponding questions. The desire to have the traditional REST as the control dictated the choice to keep the procedures as in previous REST studies. A probable next step in this research area would be to investigate the video group with the same corresponding questions as the simulation group. This type of investigation should be looked upon with caution. It is not the questions themselves that are being investigated. It is the affect of the total immersive nature of the simulation that is revealed through responding to the questions that is being investigated. Additionally, a pre-assessment was not administered and is a probable area of future research. Post study questioning for the Hawthorne Effect (Adair, 1984), which causes increased production of a task due to participants being observed, may be necessary to determine participant view of the study. This was attempted in the post-simulation questions however more open prompts might solicit broader responses concerning the study.

Definition of Terms

Critical Race Theory: looking at race relations and discrimination through a pattern in American law that maintains interests in power.

Culturally relevant pedagogy: pedagogy taught from the student perspective: student experiences academic success; student develops/maintains cultural awareness; and student develops a critical consciousness to question the status quo.

Ethical sensitivity: empathizing and taking other's perspectives, the first element of the Four Component Model, developed by James Rest et al., (1999).

Perspective-taking: the ability to define a problem; consider the feelings of other's involved; brainstorm alternative ways to solve the dilemma; choose a course of action; and evaluate the probable outcome.

Scientific literacy: the ability to understand science concepts and processes to converse about science issues in the popular press, determine validity of conclusions, evaluate scientific methods and information, pose and evaluate arguments for personal decision making, civic and cultural participation, and economic productivity.

Socioscientific issues: open-ended, ill-structured, controversial, debatable problems, involving scientific content connected to societal issues and technology embedded with ethical and moral implications.

Teacher education program responsibilities. Standards that relate to preparation of candidates to teach students of diverse cultures. The *Professional Standards for the Accreditation of Schools, Colleges, and Departments of Education* (NCATE, 2006, p. 29 - 31) Standard 4: Diversity recommends the teacher education program:

- Design, implement, and evaluate curriculum and experiences for candidates to acquire and apply the knowledge, skills, and disposition necessary to help all

students learn. These experiences include working with diverse higher education and school faculty, diverse candidates, and diverse students in P-12 schools.

- Interaction and experiences in classroom and field settings with faculty, candidates, and P-12 students who represent diverse ethnic, racial, gender, language, exceptionalities, and religious groups.
- The active participation of candidates from diverse cultural backgrounds and with different experiences is solicited, and valued and accepted in class, field experiences and clinical practice.
- The experiences help candidates confront issues of diversity that affect teaching and student learning and develop strategies for improving student learning and candidates' effectiveness as teachers.

According to the *Model Standard for Beginning Teacher Licensing, Assessment and Development: A Resource for State Dialogue* (INTASC, 1992, p. 18 - 19) Principle #3:

- The teacher understands how students differ in their learning approaches to learning and creates instructional opportunities that are adapted to diverse learners.
- The teacher understands how students' learning is influenced by individual experiences, talents, and prior learning, as well as language, culture, family, and community values.
- Teacher respects students as individuals with differing personal and family backgrounds and various skills, talents, and interests.

- Teacher seeks to understand students' families, cultures, and communities, and uses this information as a basis for connecting instruction to students' experiences (e.g., drawing explicit connections between subject matter and community matters, making assignments that can be related to students' experiences and cultures.)

The *North Carolina Professional Teaching Standards* (2008) sets the following standards as the basis for teacher preparation, teacher evaluation, and professional development:

- Demonstrate a knowledge of diverse cultures
- Select materials and develop lessons that counteract stereotypes and incorporate contributions
- Recognize the influences on a child's development, personality, and performance
- Consider and incorporate different points of view
- Maintain high expectations for all students
- Improve communication and collaboration between the school and the home and community.

The *Standards for Science Preparation* (NSTA, 2003, p. 24 - 25) Recommended Program Requirements Standard 7: Science and the Community:

[Science teachers] actively engage students in science-related studies or activities related to locally important issues. To show that they are prepared to relate science to the community, teachers of science must demonstrate that they:

- Identify ways that they relate science to the community, involve stakeholders and use community resources to promote the learning of science.

- Involving students successfully in activities that relate science to resources and stakeholders in the community or to the resolution of issues important to the community.

Science teacher responsibilities. Standards related to teaching science to students of diverse cultures:

American Association for the Advancement of Science: Science for All Americans

(SFAA), an initiative of the American Association of the Advancement of Science (AAAS), focuses on adult scientific literacy. The report recommends what students should be able to do in science, mathematics, and technology by the end of high school. Inherent in the title, the SFAA “recommendations pertain to those who in the past have largely been bypassed in science and mathematics education: ethnic and language minorities and girls” (p. xv).

National Science Teachers Association: Principles of Professionalism for Science

Educators (NSTA, 2007, p. 1- 3) state science educators are central to educating, inspiring, and guiding students to be responsible scientifically literate citizens. Therefore science educators must uphold the highest ethical standards by understanding and demonstrating:

- The importance of promoting the growth of all students
 - Show respect for each individual and value his or her identity and cultural heritage.
 - Help students reflect as learners and use skills of inquiry to become effective problem solvers

- Keep science discussions focused on empirically based evidence collected from the natural world, while showing respect for the various world view of students.
- Recognize the abilities and strengths, as well as their unique learning needs

National Science Education Standards: These standards are guided by the following principles (NSES, 1996, p. 19):

- Science is for all students
- Learning science is an active process
- School science reflects the intellectual and cultural traditions that characterize the practice of contemporary science
- Improving science education is a part of systemic education reform

The purpose, significance, and limitations of the study, along with the definitions of terms provide a common language, context for the research questions, and set the stage for the literature review.

CHAPTER TWO: REVIEW OF LITERATURE

Overview

This literature review has two sections. The first section discusses how this area of research is impacted by several concurrent conditions: teacher education program responsibilities; recommended teacher obligations set forth by professional teaching organizations; the rapidly diverging student/teacher racial demographics; and the racial inferiority paradigm noted by the CRT. A manifestation of the CRT may be evident in today's attitudes about multicultural teaching resulting in increased "border crossing"(Aikenhead, 1996) challenges for students of color. These colliding factors may result in limiting students of color acquisition of scientific literacy. The second section examines prior research pertinent to this study from several domains: multicultural teacher education programs; moral development theories; socioscientific issues as they related to the definition of scientific literacy; and computer-based stimulations as an effective learning environment.

Previous studies in teacher education that have investigated multicultural teacher education programs will be discussed. The focus of these studies has been teacher awareness and the relationship to teacher actions; suggesting long-term, comprehensive, holistic curriculums.

The rationalization for using the REST is situated in the theoretical framework of moral theories. These theories are viewed through a social cognitive lens. The REST instrument is positioned in professional ethics and professionalism which draws from the

research in moral theories. Studies show educational interventions positively effect moral development and behavior in members of professional communities. Additionally, studies in perspective-taking research are also situated in the moral development theoretical frameworks. Studies in this area focus on stimulating perspective-taking in an effort to improve social reasoning. The rationale for emulating and creating a REST simulation are positioned in social cognitive research, specifically moral development.

The relevance to science education is the definition of scientific literacy. Scientific literacy entails the ability to examine moral reasoning, meaningful participation in a democratic society and possess critical thinking and decision-making skills related to socioscientific issues. Previous studies investigating moral reasoning and socioscientific issues in science classes are used to demonstrate this study's importance in science education.

Lastly, prior research studies from military, fire fighter and business education fields provide the rationale for developing the REST computer-based simulation. Studies in this area utilize the effective learning environment, immersive power, and perspective-taking abilities of computer-based simulations. The newly developed REST stimulation emulating two scenarios will be used to influence the science teacher perspective-taking experience thereby affecting teacher ethical sensitivity to instances of racial and gender intolerance.

Selection Criteria

The research articles and books used in this review included a broad range of interdisciplinary works in anthropology, dentistry, education, psychology, and sociology. In

addition, position statements and publications were read from national science education and teacher education professional organizations. Recommendations and position statements from professional organizations were the foundation for this review. These documents are not assumed to be research-based however they present a locus for definitional ideas. The selection of studies used in the initial review process were from four electronic databases; Academic Search Premier, ERIC, Google Scholar and PsycINFO. Journals such as *Anthropology and Education Quarterly*, *International Journal of Intercultural Relations*, the *Journal of Counseling and Development*, the *Journal of Dental Education*, and the *Journal of Moral Education*, were included in this integrative review. Key words for the search included professionalism, teacher education, ethical sensitivity, moral education, perspective-taking, culturally responsive teaching, teacher attitudes towards diverse students, power and privilege, Critical Race Theory (CRT), scientific literacy, and socioscientific issues (SSI). The decision to use these was guided by the importance in presenting a cohesive vision of the dynamics involved in this review.

Readings of other moral theorists prominent between 1890 and 1980 were included to achieve a better idea of the evolution of moral development theories. In the area of culturally responsive teaching, attention was given to studies that recognized the need to modify teacher attitudes towards students who were culturally and linguistically different from themselves as a way of increasing student achievement. Bibliographies from dissertations and literature reviews (Franklin, 2006; Simpson, 2007; Wiggan, 2007) were used as a source for other publications. SSI studies which investigated the expression of

student perspectives and reasoning about morals and principles and elements of virtue, in the context of science instruction involving the personal, physical and social world of students, as a necessary component of scientific literacy were included in this review.

Because of the focus of the review, articles that failed to connect issues of power and privilege and classroom experiences of students of color were excluded. Studies related to specific classroom strategies for students of color were excluded if they did not give attention to teacher professionalism. The area of moral development theories is vast, thus studies outside the scope of ethical sensitivity and perspective-taking were excluded. However it was necessary to give a brief developmental history of ethical sensitivity and perspective-taking for cohesiveness. It is also out of the scope of this review to delve into why culturally responsive teaching is necessary, racial identity development or the appropriate strategies for incorporating multicultural views in SSI discourse. Several investigations measured intercultural sensitivity however these studies focused largely on relations and interactions of different cultural groups that did not exist in an environment of power and privilege, thus they also were excluded.

Present Concurrent Conditions

Teacher education responsibilities. The preamble and principle #3 of the Interstate New Teacher Assessment and Support Consortium (INTASC), the National Board for Professional Teaching Standards, and standard #4 of the National Council for Accreditation of Teacher Education (NCATE), places the responsibility of implementing diversity programs and developing advocates for students in teacher education programs (INTASC, 1992; NCATE, 2006). The NCATE diversity standard recommends teacher education programs support teacher candidate learning by designing, implementing and evaluating “curriculum and experiences for candidates to acquire and apply the knowledge, skills, and disposition necessary to help all students learn,” (p. 10). The phrase “all students” is similar to NCATE’s definition of diversity.

Diversity and its role in teacher education programs is central to this study, therefore NCATE’s definition of diversity will be utilized. Diversity is defined as “differences among groups of people and individuals based on ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area,” (p. 53). Teacher education programs should also provide teacher candidates working experiences with diverse individuals who are faculty members of higher education institutions, other candidates, and P-12 students.

Science teacher responsibilities. Through education programs teachers are mentored, counseled and expected to teach within the professional education standards set forth by organizations such as the National Science Teachers Association (NSTA) and teach

science in accordance with the American Association for the Advancement of Science (AAAS) and the National Science Education Standards (NSES). These professional organizations recommend school science aim for scientific literacy for all students. In addition the *Standards* “unequivocally advocate including those who traditionally have not received encouragement and opportunities to learn science,” (Bybee, 1995). As participants and members of these professional organizations, science teachers establish and revise standards of practice, model ethical behavior, and account for their actions (NSTA, 2006, Science Teacher Professionalism). Professional science teachers facilitate the development and construction of science concepts for learners by assuming the responsibility for enabling each learner to reach their potential. This means empowering students to think and respond with their cultural, ethnic and linguistic differences, by focusing on learning in a personal context rather than an abstract context (NSTA, 2006). Science for All addresses students who are traditionally excluded from science and calls for teachers to teach science to engage all students (Gilbert & Yerrick, 2001). For students like Miguel who are more likely to be culturally and linguistically diverse from their teacher, this is shown by respecting the language and heritage of the student, maintaining high expectations and consistently using the student’s fund of knowledge as a resource (Barton & Osborne, 1998; Brisk, Barnhardt, Herrera, & Rochon, 2002; Moll, Amanti, Neff, & Gonzalez, 1992).

Effects of changing student demographics. In 1993, 34% of the U.S. K-12 student population was students of color. These percentages increased to 41% in 2003 while the White U.S. K-12 student population decreased by 12.6%. Increases in student population by

race and ethnicity during the same time frame were: African American 3.6%; Native American 9%; Asian 22%; and Latino/a 45.6% (<http://nces.ed.gov/programs/digest/d05/lt1.asp#3>). According to the US Department of Education, the percentage of White teachers in K-12 public schools has remained stable, reporting 86% in 1979 and 84% in 2000 (<http://nces.ed.gov/programs/digest/d02/dt101.asp>). Similar teacher percentages are noted in high school grades 9-12 where limited access to advanced and honor classes by marginalized students may be a symptom of the growing student/teacher racial difference. For Miguel, he recognized what he found meaningful in his experiences of the natural world were not valued in middle school or high school. He remembers his teachers reinforcing the need to prepare for the job force not college or careers in science (Barton & Yang, 2000).

The growing student/teacher racial difference can present similar problems because many teachers enter the profession unfamiliar with student backgrounds and experiences that are different from their own. Their ideas are often skewed and distorted. Two studies referenced by O'Loughlin (1992), speak of "learning outcomes being controlled by teachers" and "teachers playing an active role in defining and controlling the kinds of discourse permissible during the lessons," (p. 806). Teachers in a school populated by culturally unfamiliar students and administrators may be guided by their beliefs, attitudes, and base knowledge thereby effecting their actions in the classroom. If fear is coupled with unfamiliarity, this can be seen by not enriching the curriculum with students funds of knowledge, not recognizing acts of intolerant behavior and not taking the perspective of the

students, in essence hindering the acquisition of scientific literacy instead of advocating on behalf of the student (Rios, 1996; Villegas & Lucas, 2002). Such classroom environments risk perpetuating the notion that students must abandon their own sociocultural and experiential frames of reference and begin to function effectively in an abstract world (O'Loughlin, 1992). This suggests to the student a separation of oneself, from racial and ethnic identity as the only way to be successful. The NSTA specifically recommends teachers focus on personal context, relating content to student culture and ethnic heritage rather than teaching in an abstract context. NCATE specifically calls for teacher education programs to provide preservice teachers the necessary experiences to help all students learn.

Attitudes about multicultural teaching. Attitudes and perceptions predominant in multicultural education and the depiction of people of color in American jurisprudence have shared a common trait (Tate, 1997). The CRT relates law to the governing discourse on race and racism with a confrontational agenda. CRT identifies racism as endemic in US society and looks at the resulting limitations in education for students of color. It borrows from Marxism, poststructuralism, feminism, pragmatism, liberalism and cultural nationalism to provide a coherent analysis of the experiences of students of color. CRT looks at the contextual history of the law and argues how, for example, a fundamental document like the Constitution laid the legal foundation for the federal government to be legally empowered to maintain African American's inferiority through the manifestation of slavery. The inferiority paradigm has been supported by political, scientific, and religious theories and

has led to an assumed intellectual inferiority of African Americans, Native Americans and Latinos that has fueled an unequal education system for people of color.

Effects of the inferiority paradigm are evident in responses to multicultural teacher education programs. Advocates of multicultural teacher education are met with accusations that such policies go against national unity; multicultural policies are not supported by research; high standards of academic excellence will not be favored; academically unprepared students of color will be allowed to enter teacher education programs; and using different approaches to teach students of color will lower the academic environment (Gay, 2005). Teacher education programs equivocate about where multicultural education should be placed in their institutions. This perpetuates confusion and misguides preservice and inservice teachers.

Cultural influences. Miguel's story (Barton & Yang, 2000) is an ethnographic reference for the theoretical framework "border crossing." Border crossing points out the probable obstacles for students who travel from their culture to the subculture of school science or science itself (Aikenhead, 1996). Aikenhead suggest teachers become "culture brokers" helping students resolve culture conflicts that exist between their everyday lives and the world of school science. Without this cultural navigation school science will be less accessible to students and fewer students will succeed and achieve scientific literacy (Aikenhead & Otsuji, 2000). Miguel's conflicts between his culture, school culture and the culture of science led him to believe that the way to take advantages of opportunities is to

have the standards and expectations of the dominant culture or at least the understanding that these views are powerful.

Border crossing challenges are demonstrated in the following research study which examines the effects of student culture, science culture and school culture on the acquisition of scientific literacy. One of the goals of school science is to transfer some of the cultural practices of professional science to the classroom. An ethnographic study of an urban fifth grade science class by Hogan and Corey (2001) discussed the importance of analyzing student contextual resources, interactive customs and school-based cultural points of view. This study of 16 African American students, four Latino, and one Euro-American student investigated how the collective culture of science within a classroom was reframed by the student social culture thereby influencing scientific literacy. The researchers illuminated how the process of science was overlooked by the student agenda which was due to the established student cultural and social norms.

Depending on the task at hand, science conventions may not be in alignment with the student social culture. The differences between school culture and science culture must be taken into account (Hogan & Corey, 2001). School culture stresses individual achievement and competition however science culture stresses collaboration and peer reviews for increasing knowledge versus being right. When the social culture of the student was in conflict with the social culture of science the student social issues came to the forefront as more salient to the students than the educational objective (Hogan & Corey, 2001). For example, students tried to change their predictions mid-way through a laboratory

experiment because they wanted to be right. However, in science, predictions are not only valuable when right; knowledge is increased even if the prediction is incorrect.

Additionally, during a peer review to determine which student experiment would be nominated as the class experiment, the students focused solely on each others design weaknesses rather than design strengths. The goal was to demonstrate how scientists collaborate when designing an experiment. Both examples in this study illustrate student use of personal preferences for competition and school-based norms for individual success. This study reveals the importance of thinking about the influence of student social culture within the culture of school science and scientific norms.

Supporting Research Studies

Multicultural teacher education programs. Multicultural teacher education programs provide teachers the skills and experiences to help students negotiate the cultural borders between their lives and the culture of science. However the focus of these programs has been teacher cognition and its interdependency with teacher actions (Rios, 1996) suggesting multicultural education curriculum that is holistic, comprehensive and long-term.

Recommendations include designing culturally relevant curricula and pedagogy integrated in all aspects of teaching from the “standards” to building learning communities. Schmidt (1998) designed a cross-cultural literacy semester course in an attempt to achieve cultural understanding by having teachers write a detailed autobiography, compose a biography of someone culturally different from them, and perform a cross-cultural analyses of differences and similarities. The ABCs (autobiography, biography, cross-cultural) course is based on

the assumption that when teachers (preservice and inservice) become acquainted with cultural differences by acquiring information first-hand about the lives of their students, the impact of these experiences are internalized and personal. Fifteen of the 20 present and future teacher participants felt they learned from the experience, gained insights and an awareness of themselves and others. Participants felt the experience would better help them to understand their students.

A different approach. The above study addresses the need for teacher education programs to develop multicultural curriculum by developing courses and implementing strategies which examines teacher beliefs about student characteristics, external influences, and responses to diversity. This study proposes a different approach for teacher education programs. Instead of indirectly affecting change in teacher responses to diversity based on the interdependency of their beliefs, this study aims to affect teacher responses to diversity based on recognizing instances of racial and gender intolerant behavior which are situated in school-based professional ethics; aimed toward professionalism. By using teacher knowledge and observance of professional codes of ethics to recognize instances of racial and gender intolerant behavior, ethical sensitivity towards intolerant acts will increase (Bebeau, 1994). This may be a more direct and concrete way that benefits students faster instead of attempting to alter teacher personal beliefs. The endeavor is to change behavior circumventing emotional barriers that are present when trying to change belief systems (Brabeck et al., 2000). Encouraging tolerance by means of adherence to professional ethical codes sets a standard of fairness. This in concert with the aforementioned comprehensive

teacher multicultural education programs may prove to be very effective for teacher perspective-taking, more efficient culture border crossing skills, and quicker acknowledgement of intolerant behaviors.

The theoretical framework draws from moral theories viewed through a social cognitive lens (Sprinthall, Sprinthall, & Oja, 1994). Extending the work of Piaget and Kohlberg in moral development, Rest, Narvaez, Bebeau, and Thoma (1999) changed how moral development was viewed and measured using a schema theory to explain moral judgment thus differing from previous theories which viewed moral development in stages. Rest (1983) developed the Four Component Model (FCM) which identifies at least four integrated abilities as needed conditions for effective moral functioning (Rest, Narvaez, Bebeau, & Thoma, 1999). Brabeck et al. (2000) further describes the FCM; (a) ethical sensitivity, empathizing and taking other's perspectives; (b) moral judgment, integrating and weighing various moral considerations; (c) moral motivation, prioritizing moral values relative to other values; and (d) moral action, requiring moral character, ego strength, conviction and courage.

As of 1980 there were some empirical data suggesting there was a distinction between moral reasoning and ethical sensitivity however there were no instruments or methods to study ethical sensitivity. The Dental Ethical Sensitivity Test (DEST) was developed to measure the ability to interpret instances in the dental setting related directly to responsibilities stated in the professional code of ethics. The term ethical sensitivity is used rather than moral sensitivity, because the instrument assesses the ability to interpret factors

directly related to obligations in the profession code of ethics (Bebeau, 1994). Dental students were placed in real-life situations by viewing videotapes to take on the perspective of the dental professional in the scenario and asked to respond to questions as if they were the professional. They were also asked why they responded the way they did, how they thought the patient would respond, and what they thought should be done in the situation. The semi-structured interview questions for the DEST were adapted by Bebeau and Rest from the Defining Issues Test (DIT). The DIT measures post-conventional moral thinking based on Rest's FCM of moral development (Bebeau, 2002; Brabeck et al., 2000). The DEST indicated ethical sensitivity could be reliably assessed and improved with instruction (Bebeau, 1994). Research has shown that ethical sensitivity is distinct from moral reasoning and intentional education programs improve ethical sensitivity (Bebeau, 1994; Bebeau, Rest, & Narvaez, 1999; Reiman, 2009).

The research in ethical sensitivity primarily assumes it is something someone will do or is doing that can affect the welfare of someone else. Educators may ignorantly hold negative stereotypes that prevent them from treating persons different from them with respect and dignity. These attitudes can be displayed covertly through tone of voice, posture, and gestures and overtly through statements. Acts of intolerance can adversely affect the way students feel about themselves, peers, and their schools which may affect their adjustment to school and their academic success. Educators have a professional responsibility to acquire knowledge and skills to respond to intolerant behavior in ways that are ethically defensible and consistent with their professional ethical codes (Bebeau, 2002).

Brabeck et al., (2000) the developers of the REST, “reason that if aspiring professionals understand that their professions expect and require certain kinds of ethically defensible behavior, they are more likely to adopt these behaviors,” (p.223). Teachers can be expected to learn their professional code of ethics, use them and take appropriate action. In other words, it is reasonable to expect teachers to behave tolerantly and promote such behaviors in their colleagues and students.

Brabeck et al., (2000) relates ethical sensitivity to educator recognition of racial and gender intolerant behaviors in school settings. Thus ethical sensitivity for educators involves the ability to recognize ethical issues in a situation from (a) verbal and nonverbal behavior; (b) identifying the needs or wants of others in the situation; (c) predicting other’s reactions to help; and (d) responding with appropriate concern. The research in professional ethics, situated in the FCM, focuses on the professional’s ability to interpret factors directly stated as obligations in the professional code of ethics.

The REST is a reliable measure assessing educator ethical sensitivity to racial and gender intolerance in school situations (Brabeck et al., 2000) and extends the work of Rest and Bebeau. The latest derivation of the REST is the Quick-REST. Two changes were made from the REST to the Quick-REST. First, the semi-structured interview questions were replaced with 18 Likert-type survey questions following each scenario. The survey questions were a 1 – 5 scale, “I strongly agree” to “I strongly disagree.” Second, two REST scenarios were used to assess ethical sensitivity; Basketball Practice and Faculty Lounge. Responses from both scenarios create a score that reflects ethical sensitivity (Sirin, Brabeck,

Satiani, & Rogers-Sirin, 2003). Currently, these two of the five REST scenarios are used for evaluation purposes and the remaining three are used in teacher education and professional development workshops.

The scores of the Quick-REST assess the ability of participants to recognize ethical issues identified from school-based professional codes of ethics (S. R. Sirin, personal communication, September 18, 2008).

Use of computer-based simulation. A simulation “approximates a real world setting” and provides a complex virtual learning environment (Reigeluth & Schwartz, 1989; Winn, 2002). Stimulations can be utilized to enhance the teacher’s perspective-taking experience. Perspective-taking may provide the opportunity to consider others’ viewpoints and induce cognitive conflict. This type of growth and recognition of self does not happen in isolation rather it occurs through the cognitive development of social interactions and/or moral experiences challenging conflict between thought and behavior resulting in more sophisticated, consistent and comprehensive perspective-taking behavior (Hall & Bishop, 2001; Selman, 1977).

Perspective-taking levels are basic structures of social reasoning and are used in content areas such as interpersonal relations, moral reasoning, social problem solving, communication skills, etc. Through social games and social and moral dilemmas Selman and Byrne (1974) identified developmental levels of social perspective-taking. Selman (1977) implies that intervention research should aim to stimulate perspective-taking through content areas of social reasoning. Consistent with Piaget and Kohlberg, Selman (2003)

believed individuals form ways of thinking through social experiences which help to influence thinking about morality, justice, and fairness. It is a move from how to understand oneself to how one actually relates to others.

Effective learning environment. Cognitive growth that may occur by cycling through adaptation and assimilation noted as disequilibrium (Piaget, 1975) can provide a solid structure for designing simulation environments. Artificial intelligence and skills are built into virtual environments; to play the simulation a player must incorporate his/her prior knowledge (assimilation) with the yet unlearned skills of the virtual character(s) and possibly other players (accommodation). The merging of prior knowledge and the new knowledge may result in the player holding two opposing views, cognitive disequilibrium. Simulations supply a meaningful engaging learning environment by providing for the cycling of assimilation and accommodation which is cognitive disequilibrium and resolution (Eck, 2006). Simulations succeed as teaching tools when they initiate cognitive disequilibrium and resolution while allowing the participant a risk free environment.

Hoyt, Blascovich, and Swinth (2003) describe virtual environments as having a compelling sense of immersion because it leads to perceptions of environments and their contents as if they are not artificial. The researchers used virtual environments to replicate two classic social psychology studies on social influences. The findings showed the classic social inhibition/facilitation effects were replicated in the virtual environments. In other words, individual's task performance was impaired in the presence of an avatar as compared

to those performing the task alone. Implications are given for greater effectiveness of virtual environments for studying social influence.

Studies in teacher education literature were not found that explore using computer-based simulations for influencing perspective-taking to affect the recognition of racial and gender intolerant behavior. However, prior studies in the military, fire fighting, and higher business education fields did use computer-based simulations to train specific skills as well as relate those skills to perspective-taking in sociocultural issues.

The military, fire fighters (Dugdale, Pallamin, & Pavard, 2006; Harmon, 2003; Macedonia, 2002), and higher business education fields (Bos, Shami, & Naab, 2006; Whitehouse, 2005) have reported success using simulations for training and educating adults. For fire fighters and military personnel simulations must provide an immersive environment because they rely heavily on their comrades, and their decisions depend on emotions and unconsciously performed gestures, body positioning, and head movements which have cultural and occupational implications. Virtual characters in the simulations are often constructed based on actions which occur during live training. The gestures exhibited by virtual characters were realistic and only slight differences were noted in the interpretations between humans and virtual characters (Dugdale et al., 2006).

Relevance for science education. Sadler, Chambers, and Zeidler (2004) state that an “important goal in science education has become the promotion of learner appreciation for the interdependence of society and science.” Participation of citizens is necessary for technology and science to be managed responsibly, ethically, and for the betterment of

society. Science education is the foundation for informed citizens to participate, discuss, and make decisions in a modern, democratic, technological society (Berkowitz & Simmons, 2003). In an earlier paper Sadler (2004) positions socioscientific issues as one component of scientific literacy then builds the case that students must be capable of considering and resolving scientific issues, be able to negotiate socioscientific issues, and produce informed decisions concerning those issues. To understand socioscientific issues, student comprehension involves knowing the content of an issue, processing information regarding the issue, and attending to moral and ethical ramifications, to produce an informed decision. To meet this end Sadler (2004) recommends teachers provide students with, extended opportunities to actively reflect on multiple perspectives surrounding socioscientific issues, a robust understanding of scientific data, and encouragement to integrate scientific knowledge into their decision-making process. Recommendations are also given for teacher training programs to help preservice teachers, effectively integrate socioscientific instruction, have a broader current understanding of science content and understand the student's perspective and moral development trends. To address these recommendations teachers would need to be reflective of their own moral decisions, recognize they are role models for the ethical decision-making process, and understand their student's perspective as they learn moral and ethical ramifications to socioscientific issues. An educational intervention which influences perspective-taking based on professional codes of ethics increases social reasoning skills of teachers and reduces border crossing challenges of students of color, provides greater scientific success and maintains their cultural awareness.

CHAPTER THREE: METHODOLOGY

Overview

The sections of this chapter answer the following research questions via a quasi-experimental design:

- 1) Can a computer simulated environment affect preservice science teacher's ethical sensitivity to instances of racial and gender intolerance when compared to the traditional REST-CD?
- 2) Can a computer simulated environment affect inservice science teacher's ethical sensitivity to instances of racial and gender intolerance when compared to the traditional REST-CD?

This methodology discusses the research design, setting, participants, the REST and the REST simulation. In addition, the rationale for using the REST, procedural details, and the development of the REST stimulation are summarized. A brief description of interview protocols and surveys are provided and plans for data analysis are included.

Research Design

This study utilized the posttest only control group design (Campbell & Stanley, 1963):

Group S: R → X → O

Group V: R →→→→ O

for a comparison between the REST-CD and the simulated-REST. The REST is an established assessment therefore individuals designated as V were the control group. The S

group participated as the treatment group. In the above notation, R indicates random assignment to separate groups. X represents the exposure of the treatment group to an experimental variable or event, the effects of which were measured. O refers to the process of observation or measurement. Xs and Os in a given row were applied to the same persons in that group. Left-to-right dimension indicates temporal order and vertical dimension indicates actions were simultaneous. Parallel rows represent comparison groups equated by randomization. This research design focuses the research question on the treatment having an effect. The dependent variable is the measured affect of the participants' ethical sensitivity to instances of racial and gender intolerance in school settings. The independent variables are the simulated REST and the participants designated as preservice or inservice.

Setting of the Study and Participants

The study took place in the surrounding area of North Carolina State University (NCSU). Twenty-three secondary science education students volunteered from NCSU; consequently recruitment at nearby universities was necessary to reach a goal of 30 preservice participants. Participants from NCSU were enrolled in Instructional Materials in Science, Methods in Teaching Science I, or the Alternative Licensure program (licensure-only) for science education. Electronic mail was utilized to recruit other students from Carolina Central University, Durham, NC; East Carolina University, Greenville, NC; Old Dominion University, Norfolk, VA; University of North Carolina at Chapel Hill, Chapel Hill, NC; University of North Carolina at Greensboro, Greensboro, NC; University of North Carolina Wilmington, Wilmington, NC; and Winston-Salem State University, Winston-

Salem, NC. Seven secondary science education students were recruited from Old Dominion University and two science education Master of Arts in Teaching students from University of Carolina at Chapel Hill. All preservice participants were tested at their school site. NCSU licensure-only participants were tested at their off-campus classroom location, a local high school. Contacts from the other universities either did not have secondary science education students or they did not respond to recruitment requests.

The secondary science teachers taught in the following counties of North Carolina: Durham County, Guilford County, Lee County, Orange County, and Wake County. Subjects taught by these teachers were biology, chemistry, honors chemistry, earth science, marine ecology, outdoor science, physical science, advanced placement biology, and advanced placement environmental science. Ten teachers were participants of a NSF funded project at NCSU. All inservice participants except four Wake County science teachers were tested at their school site. The four Wake County science teachers met on a Saturday morning at NCSU Centennial Campus for testing.

Preservice ($n = 32$) and inservice teachers ($n = 31$) participated in this study. The preservice sample contained 22 females and 10 males whereas the inservice sample contained 24 females and 7 males. The self reported ethnic composition for preservice participants was: 91% Caucasian, 6% African American and 3% West Indian. Inservice participants self reported their ethnic composition as: 87% Caucasian, 10% African American, and 3% Native American. Participant ages ranged from 22 – 27 years preservice and 23 – 50 years inservice. Fifty-six percent preservice and 52% inservice participants

reported taking classes or workshops for ethics, and/or multicultural issues as part of their professional training. All preservice and inservice participants reported the underrepresented population in their classes to be between 2 – 80%. Over half of the participants reported 35% or more minority student population in their science classes.

Participants were assigned to one of two groups, “V” for REST and “S” for simulated-REST based on the internet access at their site. The simulated REST was operational on 15 laptops and operates through the internet. Network configurations at various high school testing sites in Durham County, Guilford County, Orange County, and Wake County did not allow internet access for these laptops. Additionally, the internet was not accessed at Old Dominion University and University of Carolina at Chapel Hill. Consequently, site internet access became a factor in determining V or S group placement. There were 18 preservice in the video group and 14 in the simulation group. Fifteen inservice teachers were in the video group and 16 in the simulation group. The REST measurement and development of the simulated-REST are described in greater detail in the following section.

Video Instrumentation

The development of the REST was constructed around identifying acts of intolerance that signify ethically insensitive conduct in US schools. These acts were tied to existing ethical codes developed by school-based professional organizations (Brabeck et al., 2000). Ethical principles were generated from the professions of teaching, school administration, psychology, school psychology, counseling, social work, nursing, groups

working specifically with diverse populations and women. Six principles having implications for working with populations of culturally and linguistically diverse students were identified and common to all reviewed school-based professional codes. They were: (a) professional competence, (b) integrity, (c) professional and scientific responsibility, (d) respect for others' rights and dignity, (e) concern for others' welfare, and (e) social responsibility.

A digitized version of the video REST is the REST-CD. It is comprised of five scenarios in different educational settings embedded with violations of ethical principles depicted by acts of gender and racial intolerant behaviors representing 5 to 9 complex ethical issues. Using a wide range of behaviors portrayed by professional actors, the five scenarios contain 37 ethical violations. Assessment of ethical sensitivity was conducted by semi-structured interview questions. Scoring categories were: (a) no recognition of intolerant behavior; (b) recognition of intolerant behavior; and (c) recognition of intolerant behavior, elaboration of the implications, sensitivity, and complexity of issues within the context depicted in the scenario (Brabeck et al., 2000). Scoring category number three includes the ability to recognize a plan of action needs to be taken as a way to remedy the ethical violation. This scoring protocol used for the REST had a Cronbach's alpha of .82; inter-rater reliability of scoring protocol was 74.61% before disagreements were resolved and 100% after resolution. The digitized REST version scores were moderately related to attitudes toward racial and gender equity issues as measured by the Quick Discrimination Index (QDI) (Sirin et al., 2003).

The REST-CD was further developed into the Quick-REST consisting of the same five scenarios; however the open-ended interview was replaced with 18 Likert-type survey questions following each scenario (S. R. Sirin, personal communication, March 6, 2007). Of the five REST-CD scenarios two, the Faculty Lounge and Basketball Practice are currently used in the evaluation of teacher ethical sensitivity. The following is a brief synopsis of the two REST scenarios used to create the simulated-REST:

Faculty Lounge: Two teachers are discussing a student in front of a new faculty member. The two veteran teachers discuss the student's academic and private life in stereotypical and derogatory ways. They show no concern for her privacy and a complete disregard for her rights to confidentiality. In addition, it is clear that they have no understanding of her culture. When the new faculty member tries to share her thoughts and stand up for the student, she is met with hostility and ridicule.

Basketball Practice: A Black student is a few minutes late for practice and is chewed out by the coach in front of the team. He is then punished by being made to run extra laps. Meanwhile, a White student is sitting on the bleachers making out with his girlfriend and ends up being even later than the first student, in addition to being out of uniform. The coach chides him for being a "stud" and does not make him do laps, and then tells the White student that Black students keep "guys like you" out of school. Later, the Black student complains to his guidance counselor about the racist behavior of the coach. His counselor minimizes the problem and tells him to stick it out, stating that he needs basketball to get into college. This is

despite the fact that the student is on the honor role (Brabeck et al., 2000, p. 125 - 126).

Permission to emulate the Quick-REST for this study was obtained from the developers via email (S. R. Sirin, personal communication, March 2, 2007) as well as permission to incorporate the audio into the simulated REST (S. R. Sirin, personal communication, July 4, 2007).

Development of Simulation

The fictitious Hazelton High School was the virtual environment created for this study and was where the simulated REST scenarios took place. The simulated REST was created by the author with the technical assistance of computer science and science educators. The virtual environment was designed using a software application, *Virtuoso*, developed at NCSU. *Virtuoso* uses the proprietary Half-Life 2™ game engine. Virtual characters were chosen and/or created similar to the actors portraying faculty and high school students in the REST scenarios. The REST video and simulation differed in scope. In the REST videos, one only sees the scenes take place in a secondary school's faculty lounge, counselor office, and gymnasium. Hazelton High designed directly from the REST was expanded and contains a locker area, science classroom, science lab preparatory room with kitchen, gymnasium, counselor office, several hallways, and faculty lounge. The REST simulation emulates the Faculty Lounge and Basketball Practice scenarios each containing eight and nine ethical issues respectively.

Several new features were incorporated into the simulation, some because of the functionality of the software and others for a more immersive quality. It is assumed to recognize behavior one must observe, listen and feel some sort of involvement, even if from the sidelines. Immersive qualities were added to influence participant involvement: (a) virtual characters turned to “look” at the participant during poignant moments of the scenario; (b) a voice-over that described the scenes and instructed the participant to assume the role of the education professional; (c) the participant could move through several rooms; (d) a virtual school administrator guided the participant and added authority to the storyline; (e) the original audio track from the REST video provided inflections and gave meaning to the actions of the virtual characters; (f) a goal was incorporated into the plot; (g) movements of the participant were frozen to direct attention; (h) participant line of sight was controlled and; (i) thought and emotions were enticed through short answer questions presented by the virtual administrator. It is important to note that it was not the goal to create a new REST instrument, however to begin the process of evaluation and development of preservice and inservice science teacher ethical sensitivity.

Description of the Simulation

The simulation begins in the locker area outside the science classroom at Hazelton High School. A virtual character, Mr. Delaney a school administrator, greets the participant and says, “So you think you can cut it at Hazelton High? Well, we have a couple of science teacher positions open. I can’t make any promises now; we’ll see how you do in the simulations.” The participant is asked to “look around the classroom.” This familiarizes the participant with the environment, keyboard and mouse maneuvering, and immerses them in

the virtual environment. As participants investigate the science classroom they make their way into the science lab preparatory room; Mr. Delaney teleports into this room gives a description of the room and says, “The simulation will start when you click on the red button by the door. And oh by the way, I’ll check in on you during the simulation. I like to get reactions while you’re in the moment.”

When the participant finished investigating the science lab preparatory room they clicked the red button in the doorway and were teleported into Mr. Elliot’s office, the school counselor. Mr. Elliot introduced himself, gave a brief description of the scene, and explained the role of the participant, “Assume you are me.” The Basketball Practice scenario from the REST began when the participant clicked the red button on Mr. Elliot’s desk. During this scenario the participant was teleported several times between the counselor’s office and the gymnasium as the scene unfolds. Mr. Delaney checked in on the participants by appearing in the counselor’s office and the gymnasium where he asked what the participant would say, how they would react, and/or how they would advise the student if they were the student’s counselor. These in-simulation questions (Appendix B) were specific for each scenario and designed to address participant recognition of and implications of violated ethical issues. These five probes were presented by the virtual school administrator, Mr. Delaney, during critical points in the scenarios. Participants had to type in their responses before they could proceed in the simulation. In-simulation responses were stored on a university server. REST interview scoring categories described earlier were used for participant responses. At the conclusion of the scene Mr. Delaney instructed

the participant to complete the survey questions then continue to the next simulation. Upon completion of the Quick-REST Basketball Practice survey (Appendix C) the participant “walked” from the counselor’s office to the faculty lounge via several hallways and the science lab preparatory room.

The next simulation started when the participant clicked a black button in the science lab preparatory doorway and was teleported into the faculty lounge. A virtual teacher, Ms. Highland, walked in the faculty lounge, introduced herself, gave a brief description of the scene, and explained the role of the participant, “Assume you are me, the new teacher.” Ms. Highland walked out of the room and the Faculty Lounge scenario of the REST began. This scene contained similar immersive qualities described earlier and Mr. Delaney appeared three times to ask questions specific to this scene. At the conclusion the participant was instructed to complete the survey. Upon completion of the Quick-REST Faculty Lounge survey (Appendix D) the participant answered three post-simulation semi-structured interview questions (Appendix E) to garner information concerning the immersive qualities of the simulation. All Quick-REST survey questions and post-simulation interview questions were accessed through www.surveymonkey.com. Participants also completed a demographic questionnaire within the Basketball Practice Quick-REST.

Protocol and Instrumentation

The series of assessments (Appendix B - E) used to gather qualitative and quantitative data are described in this section.

In-simulation prompts. Five questions (Appendix B) were specific for situations in each scenario and designed to gain insight to the participant's ability to identify and note the complexity of racial and gender related violations. The scoring categories from the REST were used as prior themes (Miles & Huberman, 1994) for participant responses. Two questions were in the Basketball Practice scene and the remaining three in the Faculty Lounge scenario. Responses were used to support the quantitative data gathered from the Quick-REST. This semi-structured interview protocol has face-validity.

Professional codes for in-simulation prompts. Scoring categories of the REST were dependent on ethical principles embedded in professional codes. Table 1 shows six ethical principles common to professional codes that had implications for working with diverse populations (Brabeck et al., 2000). The REST was based on identification of these six principles. Recognition of these principles depended on the portrayal of behaviors in the scenarios. A table in the *Data Analysis* section of this chapter describes how the link between behaviors in the scenarios and the ethical principles were used to analyze in-simulation responses.

Table 1

Ethical Principles Based on Professional Codes

Ethical Principle	Description
A. Professional Competence	Conduct which brings credit to ones profession, including cultural competence
B. Integrity	Self knowledge of professional values, needs, limitations, and the effect of these on one's work
C. Professional and Scientific Responsibility	Ethical collaboration with other professionals and holding each to ethical and professional standards
D. Respect for Others' Rights and Dignity	Treating others with respect, guarding confidentiality, awareness of individual, cultural and role differences
E. Concern for Other's Welfare	Welfare of student is paramount, knowing impact of adverse social, political, and environmental factors
F. Social Responsibility	Helping others to understand the extent racism can cause suffering and working to improve social policy

Note. From “Increasing ethical sensitivity to racial and gender intolerance in schools: Development of the racial ethical sensitivity test,” by M. M. Brabeck, L. A. Rogers, S. Sirin, J. Henderson, M. Benvenuto, and M. Weaver, 2000, *Ethics & Behavior*, 10(2), p. 129. Adapted with permission of the author.

Quick-REST survey. This was a two-part survey (Appendix C - D); the first part contained 18 Likert-type survey questions and a demographic questionnaire. These survey questions were a 1 – 5 scale, the categories were; “I strongly agree, I tend to agree, I’m not sure, I tend to disagree, I strongly disagree.” This section contained survey questions specific for identification of ethical violations and the complexities involved in the Basketball Practice scenario. Ten questions were reverse-coded. The second part contained 18 similarly constructed survey questions specific for identification of racial and gender intolerance in the Faculty Lounge scenario. Eight questions were reverse-coded. Responses from both parts of the Quick-REST create a score that reflects ethical sensitivity. The higher the score the more sensitive the participant is towards issues of racial intolerance in schools (S. R. Sirin, personal communication, September 18, 2008). The Quick-REST reliability and validity has been presented at an international peer-reviewed conference for moral education. The researchers are currently working on publishing the results; “the alpha looks better than acceptable, approximately 0.80 and validity has been evidenced with the items from over 200 teachers” (S. R. Sirin, personal communication, March 6, 2007).

Post-simulation prompts. Post-simulation semi-structured interview questions (Appendix E) were three prompts focused on participant perception of the effect of the simulation on their responses. These responses were used in conjunction with the Quick-REST and in-simulation questions to determine an affect of the simulation.

Procedural Details

Figure 1 shows the sequence for a participant of group V and S through the Basketball Practice (BP), Faculty Lounge (FL), and simulated REST (Sim-REST).

Procedural Sequence

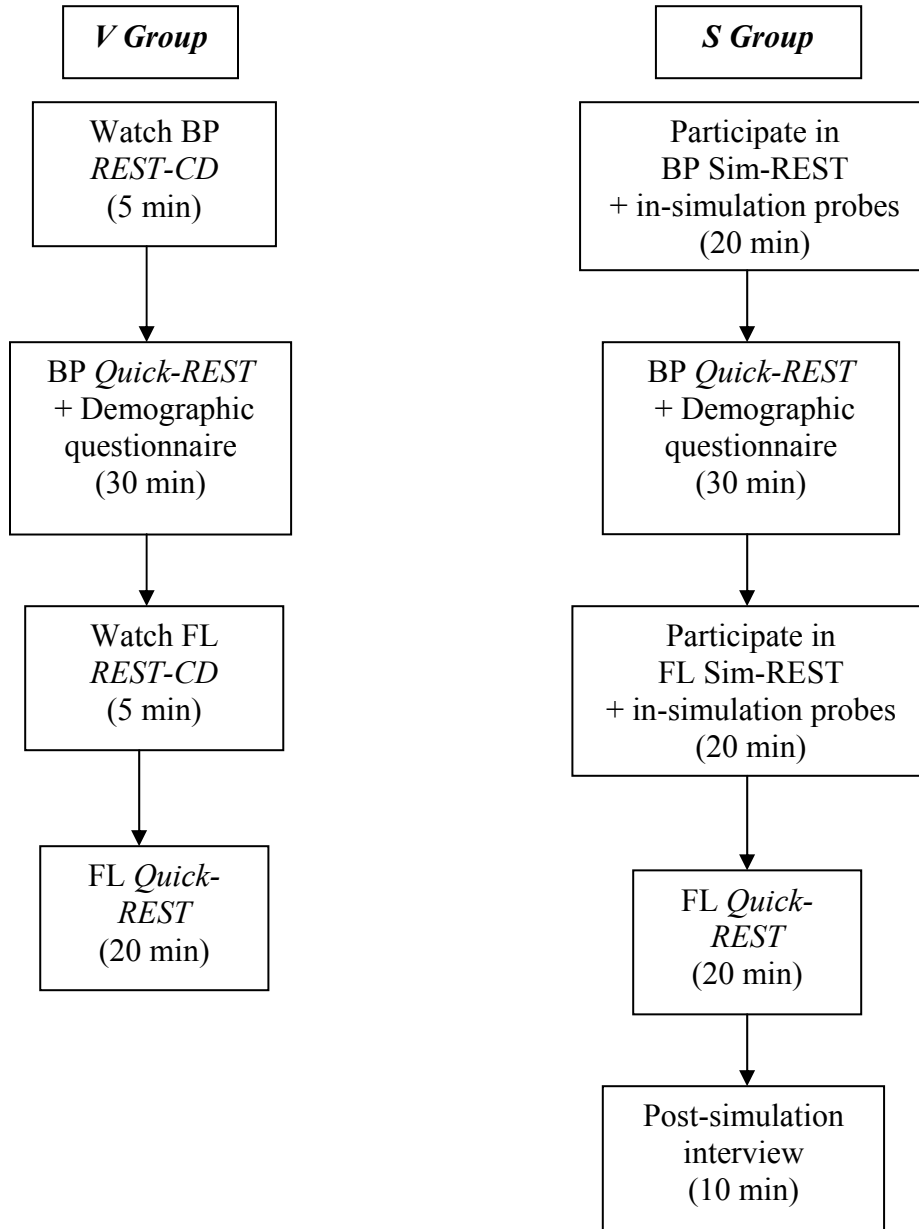


Figure 1. Procedural sequence of study for a participant in groups V and S.

Participants of both V and S groups had similar experiences. All computer laptops used contained both the REST-CD and simulated REST versions. Upon arrival and setting up laptops at the testing site the participants were given a packet (Appendix A and F) containing a consent form, procedure sequence, technology considerations for the simulation, and a reference card of the REST virtual and real characters. Both groups experienced the Basketball Practice scenario then answered the Quick-REST survey. The Faculty Lounge scenario and the corresponding Quick-REST survey followed. The S group responded to in-simulation probes during both scenarios and answered post-simulation semi-structured interview questions. Total participation time was approximately 60 minutes for Group V and 90 minutes for Group S. All participants received an iTunes gift card as an honorarium for their time invested in the study.

Data Analysis

Analysis of Responses

Quick-REST scores. The REST-CD and simulated-REST scores were determined using a SPSS syntax provided by the Quick-REST developers. REST scores were determined from the Quick-REST surveys for the following groups: preservice, inservice, video, simulation, preservice/video, preservice/simulation, inservice/video, and inservice/simulation. The SPSS syntax reversed-coded the appropriate question responses and provided a REST score for each scenario. The two separate scores were averaged as a total Quick-REST score for further data analytic purposes. Data comparison groups were: (a) preservice/simulation and preservice/video; (b) inservice/simulation and inservice/video;

(c) preservice/video and inservice/video; and (d) preservice/simulation and inservice/simulation.

Non-parametric methods were employed in the statistical analysis for the following reasons: the dependent variable was measured on an ordinal scale, distribution of the dependent variable in the population did not need to be known, and the sample size was less than 20 (Myers & Well, 2003). The sample sizes of the comparison groups ranged from $n = 14$ to 18 and the Quick-REST survey had rank order responses. Both were factors for determining the appropriate statistical analysis. Specifically, the *Mann-Whitney U* was used to ascertain a difference in REST score between each of the comparison groups. This was achieved by comparing the mean rank between groups. The *Mann-Whitney U* requires the samples to be independent and the responses to be ordinal. This test was less likely to give a false significant result from a couple of outliers making it more robust than the *t*-test; its parametric equivalent. Reliability checks were calculated for both scenarios resulting in a reliability alpha for the Quick-REST. The central idea of this study was to determine whether the simulated-REST treatment had an effect. A wide range of behaviors represented eight ethical issues in the Faculty Lounge and nine issues in the Basketball Practice scenarios.

In Table 2 the ethical principles depicted in the REST have been linked to the ethical principles violated in both scenarios.

Table 2

Ethical Issues Represented in the REST Linked to Behaviors

Faculty Lounge	Basketball Practice
1. Mr. Lynch's lack of self awareness: Integrity, Respect for other's rights, Dignity	1. Coach Nichol's racial remarks: Integrity, Respect for other's rights, Dignity
2. Mrs. Parker's lack of self awareness: Integrity, Respect for other's rights, Dignity	2. Coach Nichol's gender insult: Integrity, Respect for other's rights, Dignity
3. Mr. Lynch's lack of cultural awareness: Professional competence, Concern for other's welfare	3. Coach Nichol's treatment of colleague: Professional and scientific responsibility, Respect for other's rights, Dignity
4. Mrs. Parker's lack of cultural awareness: Professional competence, Concern for other's welfare	4. Coach Nichol's different treatment of White students: Integrity, Respect for other's rights, Dignity
5. How Ms. Highland was treated: Professional and scientific responsibility, Respect for other's rights, Dignity	5. Coach Nichol's modeling racist values to White students: Integrity, Social responsibility
6. Ms. Highland's responsibility to speak up: Professional and scientific responsibility, Respect for other's rights, Dignity	6. Mr. Elliot's responsibility to help James: Professional and scientific responsibility, Concern for other's welfare
7. Confidentiality: Respect for other's rights, Dignity	7. Mr. Elliot's failure to meet James' needs: Professional competence, Concern for

Table 2 (continued)

	other's welfare
8. Mrs. Parker's responsibility to speak to students: Social responsibility	8. Mr. Elliot's racial biases: Professional competence, Respect for other's rights, Dignity
	9. School responsibility to student body: Professional and scientific responsibility, Respect for other's rights, Dignity

Note. From "Racial ethical sensitivity scoring manual," by K. Brabeck, M. Costa, J. Henderson, L. McCubbin, L. Rogers, K. Ting, 2000. Scoring manual for REST instrument. Adapted with permission of the author.

Interview responses. Responses to these behaviors were the determining factors for categorizing participant responses. The in-simulation questions occurred during or immediately following heightened conversations between the virtual characters. The goal was to determine if participants recognized the unethical violation portrayed. In-simulation and post-simulation responses were analyzed by the researcher as recommended by Creswell (2003), notes were written in the margins before coding the "chunks" of topics and distinguishing categories. In-simulation responses were retrieved from the university server. A server upgrade resulted in a loss of a small amount of data. The data was analyzed for consistent themes and patterns as they related to the REST categories. REST scoring categories: no recognition of ethical violation; recognition of ethical violation; and recognition of ethical violation and the issues and complexities portrayed, were used as

prior themes as described by Miles and Huberman (1994) for the in-simulation responses 1 - 4. The fifth question was used to determine if the participants would recognize the major violation depicted in the Faculty Lounge scene; lack of confidentiality.

A brief description of the context surrounding each question is provided here to facilitate the understanding of the ethical principle violated in the scenarios. The first question appears during the Basketball Practice scene; *James is very upset and accuses you and administrators of knowing about Coach Nichols, how would you respond to James?* In this question the participant was given the opportunity to recognize James' feelings, an African American student, and present a plan to help James with Coach Nichols, a Caucasian male. James was the only African American team member and was continuously harassed by the Coach in front of the team, which James felt was racially motivated. He went to Mr. Elliot, his Caucasian male counselor for help. Mr. Elliot dismissed James' anger and did not present a plan to help James with the Coach's unethical behavior. This conversation between James and Mr. Elliot points to the counselor's professional responsibility to help James and his failure to meet James' needs. These actions by Mr. Elliot violated ethical principles of professional and scientific responsibility, professional competence and concern for other's welfare. Question two also takes place during the Basketball Practice scene; *How would you counsel James? Write what you would say to him.* In the context of this question, James was fed up when the Coach had an explosive response to him being late for practice when Caucasian team members were also late and not punished. James decided to quit the team and went to Mr. Elliot for help and told him

about the Coach's latest outburst. During a flash-back scene the participant sees and hears Coach Nichols' racist and classist remarks and behaviors. Other remarks obviously were meant to hurt James and make him look foolish (Brabeck et al., 2000). The Coach also insulted James and his family. After witnessing James' distress and knowing what happened during basketball practice, Mr. Elliot continually dismissed James' honor roll status and only focused on his basketball talents, telling him "you only have to stick with it [Coach Nichols' behavior] for one more year" to get into a "good college." In addition to the previous ethical principles Mr. Elliot violated, the advice he gave James showed racial bias. This demonstrated a lack dignity and respect for other's rights. Coach Nichols' racial and gender slurs, classist remarks, deferential treatment of White students, and modeling racist values violated integrity, respect for others' rights, dignity and social responsibility.

Question three provided the opportunity for the respondent to identify behavior witnessed in the Faculty Lounge scenario; *How would YOU respond to the students who made stereotypic remarks?* An intense unethical conversation takes place between Mr. Lynch, a Caucasian mathematics teacher, and Ms. Parker, an Africa American social worker, in front of Ms. Highland, a new teacher (African American) concerning a Latina student. During this conversation the social worker explained she overheard students make gender and racially stereotypic remarks about the Latina student, Lourdes. She said nothing to the students. Ms. Parker's failure to confront the students violated respect for the rights of others and social responsibility. Question four requires a response from the perspective of the new teacher in the scene; *As Ms. Highland the new teacher, write what you would say (if*

anything) in response to Mr. Lynch's comment about Latinas? The statements by Mr. Lynch about Latina students showed racial and gender intolerant behavior and were disrespectful comments about the student's intelligence. These statements were specific for Lourdes, the student, and then generalized to all Latinas. Within this conversation Mr. Lynch revealed he is unable to work with Lourdes however did not see his lack of knowledge about Latino culture as a role in his frustration. This affected his competency as a teacher. He also seemed unaware that his comments were intolerable as a professional. This showed a lack of self-awareness. Mr. Lynch's behavior exhibited a violation of competency, integrity, and respect. Lastly question five, *As Ms. Highland the new teacher, what if anything, disturbs you about this conversation?* This question addresses whether the major violation in this scene is recognized by the participants. The two educators, Mr. Lynch and Ms. Parker, were using racist and gender stereotypic remarks as they discussed Lourdes' family situation, academics, health status, medications, and the details of past personal experiences in front of a new teacher without regard for the student's right to privacy.

Themes emerged for the post-simulation questions were associated with participant perception of the influence of the simulation on their responses during the simulated REST. These responses were retrieved via an account on SurveyMonkey.com. All responses were read in a recursive manner and organized for further analysis and interpretation. The qualitative responses were transformed into frequency counts, called "quantitizing" by

Miles and Huberman (1994). This technique facilitated the recognition of patterns and statistical display of the data.

CHAPTER FOUR: FINDINGS

Overview

The findings in this chapter are organized in two sections based on the methodologies employed in this study; quantitative nonparametric analysis of the comparison groups and qualitative interpretation of in-simulation and post-simulation responses. Both sections of this chapter address the research questions in total; 1) Can a computer simulated environment affect a preservice science teacher's ethical sensitivity to instances of racial and gender intolerance when compared to the traditional REST-CD? 2) Can a computer simulated environment affect an inservice science teacher's ethical sensitivity to instances of racial and gender intolerance when compared to the traditional REST-CD?

Treatment Analysis

Quantitative results provide *Mann-Whitney U* analysis of the REST scores and descriptive statistics (see Table 3). Cronbach's reliability alphas are also presented (see Table 4). Qualitative results show percentage responses grouped by the REST scoring categories for the first four in-simulation probes for both preservice and inservice simulation participants. In review, the scoring categories are: (a) no recognition of the unethical behavior; (b) recognition of the unethical behavior; and (c) recognition of the unethical behavior and the ability to elaborate and note the complexities of the violation. In addition, these results are situated with the percentage of participants who attended ethical and/or multicultural professional development for each response. The correlation of

responses to professional development may be useful for implications in teacher education curriculum. The percentages of preservice and inservice responses grouped by REST category for each in-simulation question are provided in Tables 5 - 9. These tables also include the percentage who attended professional development (PD) for each question. The fifth in-simulation question was asked to determine which of the eight ethical issues in the Faculty Lounge scenario would be identified as the most bothersome. The intent is to understand which violation was seen or recognized as having the most deleterious implications in the scenario. The percentages of these ethical issues are presented in Table 10. Quotes that best illustrate a representation of the REST category are presented for each question. Post-simulation responses show emergent themes organized for each of the three questions. The chapter ends with a summation of the quantitative analysis; post-simulation prompts, and visual representation of REST categorized in-simulation responses (see Figure 2).

Quantitative Analysis

Non-parametric Analysis

The *Mann-Whitney U* test was used to investigate the relationship between the two independent variables; teaching level of participant and exposure to the treatment. Table 3 shows the results of the comparison of Quick-REST scores between the four groups.

Table 3

Mann-Whitney U for Quick-REST Scores

Comparison Grp.	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Mean Rank</i>	<i>Sum of Ranks</i>	<i>U</i>	<i>P</i>
Preservice-Simulation	14	4.27	.39	11.82	165.50	60.50	.01*
Preservice Video	18			20.14	362.50		
Inservice-Simulation	16	4.11	.47	15.19	243.00	107.00	.60
Inservice Video	15			16.87	253.00		
Preservice-Simulation	14	4.04	.44	15.43	216.00	111.00	.96
Inservice-Simulation	16			15.56	249.00		
Preservice Video	18	4.33	.39	20.00	360.00	81.00	.05*
Inservice Video	15			13.40	201.00		

* $p < .05$, two-tailed.

Participants of the preservice video group shows a mean rank Quick-REST score (20.14) that is significantly higher, $p = .01$, than the comparison group, preservice simulation (11.82) and the inservice video group (13.40), $p = .05$. Inservice simulation participant's mean rank Quick-REST score (15.19 and 12.56 respectively) shows no significant difference when compared to the mean rank score of the inservice video (16.87) or the preservice simulation groups (15.43).

The Quick-REST survey is a 5-point Likert scale (1 = strongly agree, 5 = strongly disagree), the higher the score the more sensitive one is to racial and gender intolerant

behaviors in school settings. These results suggest the preservice video group is more sensitive to ethnic and gender based ethical violations than its comparison groups. A comparison was made between the mean Quick-REST scores of the preservice video and the other groups; preservice simulation, inservice video and inservice simulation. This was done to determine if a pattern emerged among the types of questions the preservice video group showed a higher sensitivity for than the other groups. No pattern was discernible. A cross analysis was preformed between the Quick-REST scores and demographics of the participants. No distinct pattern emerged based on self-reported ethnicity of the participants.

Internal Reliability

Cronbach's alpha levels were calculated to examine internal consistency and how well the Quick-REST items measure a single construct, ethical sensitivity. Alpha levels were determined for each of the four comparison groups (see Table 4). These values suggest the Quick-REST administered was internally consistent across all groups.

Table 4

Cronbach's Alpha for Each Comparison Group

Comparison Group	Cronbach's alpha	N
Preservice Video	.83	18
Preservice Simulation	.81	14
Inservice Video	.90	15
Inservice Simulation	.88	16

Qualitative Analysis

In-simulation Responses

The simulation groups are comprised of both preservice ($n = 14$) and inservice participants ($n = 16$). PS denotes preservice simulation participants and IS denotes the inservice simulation participants. The five in-simulation responses were presented by the virtual school administrator, Mr. Delaney, during the participant's visit to the fictitious Hazelton High School, the virtual environment of the simulated REST. Two questions were presented during the Basketball Practice scenario and three during the Faculty Lounge scenario. The participants were instructed to respond to the questions as if they were the counselor in the Basketball scene and the new teacher in the Faculty Lounge scene. The responses were stored on and retrieved from a university server. A server upgrade occurred during the study resulting in a loss of a small amount of data. This loss is responsible for the different sample numbers for each question. No other data was omitted.

The goal of the questions was to ascertain if the simulation had an effect on participant responses. The questions occurred during or immediately following heightened conversations between the virtual characters. It was not just the questions that might effect responses but the total of all the immersive qualities. The questions were a vehicle for gathering data. The semi-structured interview protocol of the REST described in chapter 3 was used to develop the questions. The context of each question is also provided in chapter 3.

Question one. James is very upset and accuses you and administrators of knowing about Coach Nichols, how would you respond to James? Percentage of responses grouped by REST categories and corresponding PD percentages for question one (see Table 5).

Table 5

Question One REST Categories and PD percentages

Level	REST Categorized Responses		
	No recognition	Recognition	Recognition and Acknowledged Implications
Preservice <i>n</i> =13	85%	15%	0
Inservice <i>n</i> = 10	50%	50%	0
Ethics/multicultural PD	38%PS 19%IS	0%PS 43%IS	

Participant responses either requested further information without acknowledging James' fury or recognized James' anger and asked for further information about the Coach. No one offered a plan to help James with the Coach. The majority of the preservice participants and half of the inservice teachers did not identify James' feelings.

1. I would reassure him that the administrators had nothing to do with Coach Nichols and that we did not know what he was doing. PS
2. I'd ask James to elaborate on his concerns about Coach Nichols. I'd ask him for specifics. PS
3. What is it that you think we know about Coach Nichols? PS

4. What are you talking about, James? What do you mean? Tell me what has happened, what has made you say that? IS

Thirty-eight percent of preservice teachers and 19% of inservice teachers who responded by not identifying James' feelings had taken PD in ethics and/or multiculturalism.

Half of inservice and 15% of preservice science teachers acknowledged James' feelings and requested further information about the Coach. Of the inservice teachers who had this type of response 43% reported attending PD.

1. I am not sure that I do know James. Can you share with me what is upsetting you about Coach Nichols? PS
2. I don't know Coach Nichols as much as you might but tell me why you are so upset. PS
3. You are upset; you are feeling frustrated about Coach Nichols. You are upset with me because you think I know something about Coach Nichols. Could you explain what you think I know? IS
4. I would ask him to explain what exactly it is that is making him so angry and upset. Starting from the beginning I would like to hear James' story to get his side of the story. IS

It is important to note that the question told participants how James was feeling. This was also apparent in his tone of voice and behaviors depicted in the simulation. However, a majority of the preservice and half of the inservice teachers missed an

opportunity to acknowledge the student’s feelings or convey a caring attitude and possibly build a more trusting relationship.

Question two. How would you counsel James? Write what you would say to him.

Percentage of responses grouped by REST categories and corresponding PD percentages for question two (see Table 6).

Table 6

Question Two REST Categories and PD percentages

Level	REST Categorized Responses		
	No recognition	Recognition	Recognition and Acknowledged Implications
Preservice <i>n</i> = 13	38%	0	62%
Inservice <i>n</i> = 12	17%	8%	66%
Ethics/multicultural PD	42%PS 14%IS	100%IS	42%PS 50%IS

Specifically asking how the participants would counsel James provided the opportunity to express recognition of the complexity of the issue. Approximately two-thirds of both groups articulate a plan for counseling James. However all plans were not equal and further analysis, descriptions, and groupings of the plans were needed. Table 7 shows the three types of plans presented by the participants. Even though most participants stated a plan 38%PS and 17 %IS did not. These responses were classified as no recognition. One of these responses offered a plan however it was classified as no recognition because the plan did not identify or help resolve the unethical behavior demonstrated by the Coach. The majority

of these responses focused on James' tardiness or perceived the Coach's unethical behavior as helpful.

1. James, Coach sees a lot of potential in you and knows you are a great player. He is just harder on you because he [can] see how great of a player you are. PS
2. I understand that Coach Nichols may come off strong at time[s] but I assure you he has your best interest in mind. PS
3. You interpreted the remark [by the Coach] to be racial? Could the Coach have been referring to your tardiness? What is his policy about tardiness? IS
4. I would still punish him [James] for being late in some way. After practice, however, I would call James in and talk to him. I would inquire about the reason he was late to practice. I would try to work with him and his schedule so he could work and play basketball. PS

Forty-two percent of PS and 14% of IS who wrote no recognition responses reported taking PD in ethics and/or multicultural issues. The directness of this question seeks a response of action however it is the type of action that reveals sensitivity to the student's need and defensible professional behavior.

Table 7

Plans Presented by Participants to Help Student

Level	Plans Presented		
	Coach + Counselor Talk	James + Coach Talk	Life Lessons
Preservice $n = 8$	37%	50%	13%
Inservice $n = 8$	44%	0	56%

Over a third of PS and 44% of IS participants offered a plan which involved the counselor talking to the Coach, sometimes on James' behalf. Responses varied concerning the advice given to James however all recognized the need to confront the Coach's behavior.

1. I would tell James that he is valid in feeling the way he does. It is obvious that Coach Nichols show preferences to other players and makes un[in]appropriate comments. I would reassure James of his abilities and his talent[s]. I will call a meeting. PS
2. I would like to actually talk to the Coach too. May be [sic] even with administrators present. Seems that the Coach is playing favorites based on who he likes (racially). I would tell James to try to do everything 'by the book' and document his encounters. IS
3. Do you want to set up a 3-way meeting between Coach/myself to discuss these concerns? IS

The majority of the plans stated by PS participants, as evidenced in the quote below, suggested James not the counselor, talk with the Coach “about insensitive remarks” or “point out your feelings to the Coach and tell him about how unfairly he is treating you.”

I would advise James to speak to Nichols privately about his [James’] job responsibilities and the insensitive comments. I’d also advise James to speak to Estevez (Assistant Coach) about the situation. Perhaps the three of them could sit down to discuss the matter. PS

The majority of IS and 13% of PS plans indicated a life strategy lesson as the appropriate way to handle Coach Nichols’ behavior.

1. Keep perspective on what is important (college, family commitments). Don’t allow actions of Coach Nichols to interfere with potential. Talk to Coach Estevez – he might be an ally, [to] offer strategies for dealing with Coach Nichols. Don’t quit; rise above. IS
2. Separate the game from the Coach and concentrate [on] the game. IS
3. That Nichols is a racist...and to quit the team would only allow him to win. I would tell him to continue working hard because he will always have to deal with [people] like Nichols. If James really loves the game he should continue to play. IS

The majority of the plans presented by the preservice participants did not show evidence of their advocacy on behalf of the student.

Question three. How would YOU respond to the students who made stereotypic remarks? Percentage of responses grouped by REST categories and corresponding PD percentages for question three (see Table 8).

Table 8

Question Three REST Categories and PD Percentages

Level	REST Categorized Responses		
	No recognition	Recognition	Recognition and Acknowledged Implications
Preservice <i>n</i> = 13	0	31%	69%
Inservice <i>n</i> = 11	0	27%	73%
Ethics/multicultural PD		29%PS	35%PS
		14%IS	35%IS

The majority of both groups classified the student’s remarks as “biased,” “prejudiced,” “stereotypical,” “racist,” and expressed a plan. Thirty-five percent of the participants of both groups reported taking PD in ethics and multicultural issues.

1. There is no place that is appropriate for that type of statement. Using stereotypical remarks like that will not be tolerated in this classroom (the student would be referred to the counselor). PS
2. I would tell them that they were racist and mean comments. I would send them to the counselor. IS

3. I would have discussed with them the actual harm prejudice comments such as those have on individuals, then I would probably proceed to discuss their actions with their parents. PS
4. I would correct them in a way that taught them the difference between a stereotype and a truth. Ask them why they think that stereotype is true and find an example to contradict them. PS
5. I would tell the students that the remarks are biased, unfair, and will not be tolerated at school. I would also speak to an administrator about the remarks. PS

The remainder of the responses recognized the remarks as “inappropriate” and several came with a threat of discipline; “those remarks have no place in my school,” “not tolerated in my classroom,” and “they will be punished if continued.” This is another direct question asking, “how would you respond” which presented a chance to identify the student’s remarks and suggest a plan or show complexity in the situation.

Question four. As Ms. Highland the new teacher, write what you would say (if anything) in response to Mr. Lynch’s comment about Latinas? Percentage of responses grouped by REST categories and corresponding PD percentages for question four (see Table 9).

Table 9

Question Four REST Categories and PD Percentages

Level	REST Categorized Responses			
	No recognition	Recognition	Recognition and Acknowledged Implications	No Response
Preservice $n = 10$	0%	100%	0%	$n = 12$ 16%
Inservice $n = 6$	17%	83%	0%	$n = 9$ 33%
Ethics/multicultural PD	100%IS	43%PS 21%IS		20%PS 40%IS

As the new teacher several participants would not respond to Mr. Lynch's remarks. Twenty percent of PS and 40%IS who would not say anything had taken PD in ethics and/or multiculturalism.

1. I would not say anything. I don't know this teacher's political influence in the school. IS
2. I wouldn't say anything unless I was spoken to. PS
3. As a new teacher I'm not sure I would say anything yet. IS

These responses were calculated using the total samples PS $n = 12$ and IS $n = 9$, then removed to categorize the remaining responses, PS $n = 10$ and IS $n = 6$. The majority of the remaining responses, 100%PS and 83%IS, labeled Mr. Lynch's remarks as

“generalizations” or “assumptions;” thus recognizing the true nature of the remarks. Mr. Lynch’s lack of knowledge specific to multicultural competence was in question.

1. Don’t you think that’s a bit of a gross overgeneralization? PS
2. Making a generalization like this is very unprofessional and is especially unbecoming of a teacher. PS
3. I would not dignify his comments other than to ask him where the generalities come from. IS
4. I would say that you make an assumption about all Latin American girls based on the actions of one. PS
5. He is blatantly racist toward Latino women; I would have called him on it right away. IS

Of those who did recognize the lack of cultural awareness 43%PS and 21%IS had taken PD courses. One participant discussed the lack of knowledge as it related specifically to the student, “Have you thought about the fact that she isn’t speaking up because of the language barrier,” not as it relates to working with diverse students.

The position to “not say anything” taken by several of the participants needs attention. It is the duty of the professional to speak up for students. This question is a direct question, however it did not elicit a plan nor did the responses show evidence of the complexity of the issue portrayed. It must be noted that unknown political climates in school systems can be a hindrance in professional judgment.

Question five. As Ms. Highland the new teacher, what if anything, disturbs you about this conversation? Table 10 contains the percentage of ethical violations noted by participants.

Table 10

Percentages of Ethical Violations Recognized

Level	Recognition of Ethical Violations				
	Confidentiality	Cultural Awareness	Professional Treatment	Self Awareness	Too General
Preservice <i>n</i> = 13	8%	62%	15%	15%	8%
Inservice <i>n</i> = 11	36%	18%	9%	18%	9%
Ethics/multicultural PD	20%PS	30%PS	0%PS	0%PS	0%PS
	30%IS	20%IS	0%IS	25%IS	0%IS

This question was used to unearth the major focus of this scenario; violation of student's rights to confidentiality. Besides lack of confidentiality, three other ethical violations were noted by the participants: professional treatment of Ms. Highland, lack of cultural awareness, lack of self awareness, and a few responses were too general to determine classification. Ms. Parker's social responsibility to confront student's racist comments was not mentioned by the participants.

The majority of PS and 18% of IS described behaviors that are classified as lack of cultural awareness.

1. That the teachers are talking so horribly about different races. PS

2. The two adults are sending conflicting signals in the conversation. There seems to be compassion without respect or understanding as well as racism. IS

3. Both Parker and Lynch have many preconceived notions about Latinas. PS

4. Teachers are reinforcing stereotypes. Ms. Parker lacks cultural knowledge. PS

A lack of self-awareness is represented in the following statements by 15%PS and 18%IS.

1. The negativity is awful. They are stereotyping and their comments are extremely racial. The fact that the social worker is just willing to give up on Lourdes (student) is sad. PS

2. Social worker is unwilling to find ways to help Latina student. Classroom teacher is frustrated; wants to help, but doesn't have any functional strategies. Student seems to be absent from considerations. IS

The professional treatment of Ms. Highland is represented in the following statements by 15%PS and 9%IS.

1. Ms. Highland is going to form her first perceptions of the school system based upon these comments. She may feel that this school system is racist. She too may perpetuate these stereotypes just as her colleagues because she feels she must do so. PS

2. [As Ms. Highland] that they are not talking to me. PS

Eight percent PS and the majority, 36 %IS noted the lack of confidentiality, of these 20%PS and 30%IS reported attending PD for ethics and/or multicultural issues.

1. That these teachers are discussing a student in a public setting, that they are making decisions based on biased observations and stereotypes, and that they don't respect themselves or this student enough to find out what is really going on in her life. IS
2. That the people who should be doing the most to protect the kids are stereotypical, breaking confidentiality, and cannot problem solve [in] positive ways to help the young lady involved. IS
3. It shows racial and ethnic bias. They are talking about private issues regarding a student that should be discussed in private. IS
4. That they are openly discussing about students with everyone in the room. Not searching for a solution, just complaining about what is happening instead of working towards a solution. IS
5. It is disturbing to me that confidential information about a student is being made public. Also, that the teachers are so quick to act on stereotypes. PS

As noted in the responses to question four and five several ethical principles were violated however all violations occurred in a public forum.

Post-simulation Responses

Analysis of the post-simulation questionnaire focused on the participant's perception of the simulation's influence on their answers. Evaluations of the 30 responses were based on three open-ended prompts. Responses were not split into PS and IS. The aim was to achieve a holistic picture of the simulation experience.

Question one. What was this experience like for you? Over 63% of the responses described a reflective component in the simulation experience. The simulation allowed participants to “evaluate myself and my feelings,” “made me re-think my own experiences; kind of allowed for a self-reflection,” “think about my role as a teacher,” “realize the great impact teachers in the classroom have, and how we bring all of our life experiences to bear in teaching.” The remainder of these responses were a critique of the simulation; “I thought some of the [survey] questions were biased,” “enjoyed seeing the interactions with the characters...very realistic,” “this would be a great tool to use with teachers for orientation,” “enjoyed...because it was very technological[ly] based.”

Question two. Speculate how this experience might be different from viewing a video? The amount of perceived interaction in the simulation was the focus when asked how the simulation might differ from watching a video. Sixty-six percent thought the interaction was helpful as identified by these statements, “had to pay very close attention,” “more realistic,” “interaction allows you to be personally invested,” “more control...can walk through the rooms and explore things,” and “watching a video I would feel like an outsider.”

In a video you may get caught up in the individuals on the screen. In the simulation you are more focused on the words that are being said. It [simulation] does not take into account the acting, good or bad, so there is less outside influence.

Ten percent noted redeeming qualities of both video and simulation; “more participation as I moved the avatar around...not as smooth as a video though,” “simulation allows for

stopping and reacting within where a video would probably be more life like and easy to relate to.” In 13% of the responses, little difference between a simulation and a video was noted; “[The video would be] similar, may be less involved but...the idea would still be conveyed,” “I’m not a gamer so it [video] might be easier,” and “the same can be done with a video.” For 10% of the participants the amount of interaction was a distraction or not enough to be helpful; “sometimes you were wondering what to do and what to do next instead of paying attention to what people were saying,” “actions in a video...may be clearer to see.”

Question three. How might these differences affect your responses? Comments on the reflective nature of the simulation emerged in 46% of the responses; “I thought more about what happened and examined my own reactions more closely,” and “I might empathize better because I can feel what it’s like to be in the room.” Some responses, 20% looked at how they might react and thus respond based on the nature of the content of the scenarios.

1. The simulation, though limited in its ability to portray actions, removes much of the unnecessary distractions possibly present in a video...I might judge the acting of the situations rather than the situation itself...the simulation was very effective in allowing me to focus more directly on the issues being presented, providing (hopefully) truer responses.
2. If I were to watch a video, my responses would be characterized as one of a “judge” and not necessarily as my personal ones.

3. Watching a video could make your responses bias because you have not been confronted with an actual scenario. By participating in a simulation, I felt more motivated to give the response I think I would say, not just what I know I should say.

Twenty-three percent of the participants felt the media did not make a difference in their responses. “I do not think my responses would be affected much,” or “I am not certain that they would affect my responses because of my underlying passion about the topic.”

Finally, the ability to watch “real people” was appealing to 10% of the respondents. “I would be watching real people instead of pretend people, you could relate more if you were watching real people play out the situation.”

Two major themes emerged in the post-simulation responses. Across the three questions participants noted the simulation provided a reflective environment and an opportunity for interaction with the environment. Interaction was not perceived by all participants however, as noted, the technological format might have interfered with this perception.

In summary, results of the quantitative analysis indicated that there is a statistical difference between the preservice video group and the remaining three comparison groups. A statistical difference was not indicated between the other groups. The qualitative analysis indicated the PS and IS groups gave a similar number of recognition of unethical behavior responses. Recognition of unethical behavior showing complexity of the issue was the most frequent response given by IS participants and the second most frequent response of PS

participants. No recognition of unethical behavior was the most frequent response given by PS participants and the least frequent response given by IS participants. To better illustrate this, Figure 2 provides a visual representation of the number of responses for PS and IS participants.

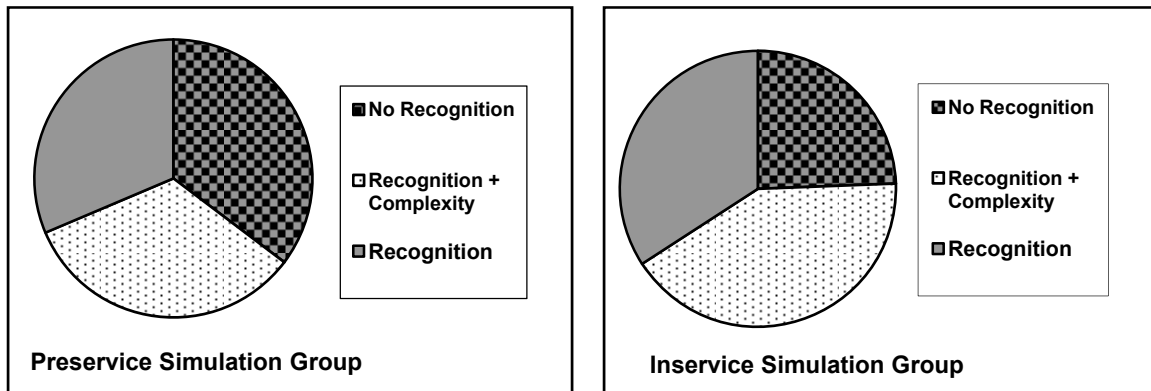


Figure 2. Comparison of IP and IS responses grouped in REST scoring categories.

The majority of preservice teachers noted a lack of cultural awareness as what disturbed them most versus the majority of inservice participants who saw the overarching theme of the scenario and noted lack of confidentiality as the most troublesome. A total of 55% of PS and 63% of IS had taken PD in multicultural and/or ethical issues. Analysis across the in-simulation responses grouped into three REST scoring categories shows at least half of both PS and IS had attended PD prior to this study. In other words, this distribution, at least 50%, was similar across the in-simulation questions for each REST category. To conclude, responses regarding the perception of the simulation varied however more pointed to a reflective, interactive, and personal environment.

CHAPTER FIVE: CONCLUSIONS AND IMPLICATIONS

“Some truths are lies. Some lies are truths. For all humans utterances are provisional and expedient. And what we wish to believe to be REAL is but our political perspective and our political perspective is determined by race, class, and social privilege from which we must be wakened to be free to throw off our skin-consciousness which is our collective blindness and sometimes that awakening must be violent for there is no other way.” (Oates, 2006, p. 185)

Overview

This study investigated a computer-simulation created for the sole purpose of influencing science teacher recognition of racial and gender intolerant behavior in school settings. Recognition of these behaviors is necessary yet insufficient to provide a teaching and learning environment where students perceive their culture, community, and heritage are valued, respected and accessed for enriching science content and making it relevant to their experiences. This chapter brings together the findings of the study with the implications and future research.

The summary will focus on the pertinent features of the study. The implications and future work will be discussed in the context of the influence of present technologies, science teacher education curriculum and studies involving professionalism and recognition of intolerant behaviors in educational settings.

Summary of Findings

This study sought to further the research of Bebeau (1985) and Brabeck et al., (2000) in professional ethics and educator professionalism. The common goal was to put a standard of fairness and professionalism based on codes of ethics at the forefront of professional decision-making. When a code of ethics becomes the foundation for

professional thinking, beliefs and assumptions may be by-passed and the results can match the expectation of ethically defensible actions. This study investigated a simulation with immersive qualities to influence educator recognition when confronted with racial and gender intolerant behaviors. The implementation of a computer simulation in the evaluation and development of professionalism in science teacher education might encourage more reflection for educator responsibility, provide opportunities for technological instruction, and present a format to explore and increase ethically defensible responses to intolerant behaviors.

Quantitative summary. The PV group had a significantly higher mean rank Quick-REST score than the other comparison groups; PS, IS, and IV. Little can be determined from this result as a pre-assessment was not performed. The IV group showed no significant difference from the IS group. No significant difference in Quick-REST scores between comparison groups was also noted in the initial study. This suggests that both the simulation and the video are comparable in assessing ethical sensitivity to racial and gender intolerance. All comparison groups had a Cronbach's alpha for internal reliability above .80. Many researchers deem a coefficient alpha above .70 to be "acceptable" and above .80 to be "good," (Myers & Well, 2003).

Qualitative summary. Qualitative data suggests both PS and IS participants are unlikely to take action in an intolerant situation. When given an open ended prompt inquiring how participants would counsel the student, no one offered a plan to help. Participants also showed difficulty identifying the Hazelton High School student's feelings.

The student's feelings were stated in the prompt however half of IS and only 15%PS acknowledged the feelings in their responses. The ability to recognize and restate feelings is a component of identifying the needs and wants of others and predicting their responses to help. Acknowledging and/or paraphrasing feelings are also a fundamental strategy for building trusting relationships. Trust is so basic and fundamental that without it communication systems can breakdown (Tschannen-Moran & Hoy, 2000).

Findings also suggest an inability to be an advocate for the student. When the questions were direct and specific, the majority of both PS and IS were able to recognize the ethical violation. For example, open prompts such as "how would you respond to James" received fewer responses that identified the ethical violation however prompts such as "how would you counsel James" lead the participant to know something should be done. More than two-thirds of both groups devised a plan to help James. It was still up to the participant to articulate an appropriate plan. The variety and types of plans shows a lack of awareness of how best to help the student in his long-standing situation with the basketball coach. The majority of PS presented a plan that did not adequately support the student in the dilemma. The most straightforward prompt "how would you respond to the stereotypic remarks," received the highest percentage of participant recognition of the ethical violation. Sixty-nine percent PS and 73%IS identified the violation noting the remarks were "prejudiced" or "racist" and acknowledged implications inherent in the violation. The remaining of the participants diminished the remarks to "inappropriate." The decision was made to separate these responses during data analysis. The question was direct in labeling the remarks as

“stereotypic” thus the words chosen by the participants to label the remarks were a factor in recognizing the remarks. For example, identifying the remarks as “inappropriate” was synonymous with being unacceptable or tactless. However labeling the remarks as “prejudiced” inferred the statements were discriminatory, intolerant, and bigoted. Words like prejudice and racist are more powerful than inappropriate and imply a specific problem exists. Almost a third of both groups diminished the remarks to “inappropriate.”

Racial and gender remarks that represent intolerance can have a detrimental impact on the other. Racial remarks in particular have an “odious social category” (Blum, 2002, p. 91). The idea of race was made-up to rationalize the mistreatment of Latinos, African Americans, and Native Americans, with legal support (Blum, 2002). The participants heard the remarks and the responses to the remarks in the simulation and chose to label the remarks as “inappropriate.” The decision to separate the “prejudiced” labeled remarks from the “inappropriate” labeled remarks stems from the researcher’s stance that the more precisely we talk about issues of intolerance the more precisely we will find answers. An aim is to attain precision in professional discourse.

There was another opportunity for the participants to be an advocate for the student in the second scenario where they assumed the role of a new teacher. Participants were asked to respond to blatant remarks that were aimed at Latinas as a group. The majority of both PS and IS identified the remarks however none of the responses revealed an understanding of the complexities inherent in the remarks. For example, a response that understood the gravity of the issue would allude to the stereotypic remarks being

problematic for the educator to teach culturally diverse groups of students. Further, an appropriate response might recognize issues of power or suggest training to benefit the educator and their students. Additionally, two PS and three IS would not respond to the remarks in the role of the new teacher. Issues of power and political structures in educational systems, as one participant alluded to, can be a deterrent to speaking up for the student. However, it is a professional duty of the educator to support those who are in their charge.

The majority of the PS participants noted lack of cultural awareness as what disturbed them the most in the Faculty Lounge scenario. However, the majority of IS participants noted lack of confidentiality as the most troublesome. The main issue portrayed in this scenario is the students' right to privacy and lack of confidentiality (Brabeck et al., 2000). The age range for PS was 22-27 years where as the age range for IS was 23 – 50 years. The PS group is a generation of individuals who have most likely received more encouragement to be politically correct and culturally aware than the IS group which spans several generations. Is the social and political climate of moral and ethical issues surrounding race and culture in contemporary American popular so invasive to have influenced participants to choose a more “politically correct” response?

The inability to identify lack of confidentiality suggests a lack of “intermediate concepts,” a category of moral knowledge. Profession specific moral concepts called “intermediate concepts” are schema-based knowledge that differ from one profession to the next (Bebeau & Thoma, 1999; Huff & Frey, 2005). Examples of “intermediate concepts” in

healthcare professions would be informed consent, professional autonomy, confidentiality and competence (Bebeau & Thoma, 1999). These concepts differ in meaning when applied to different professions. The “intermediate concepts” related to the teaching profession such as, “confidentiality,” “fairness” and “the belief that all students can learn,” can provide concrete guidelines for professional actions. Knowledge of one’s ethical sensitivity is just the beginning. It is possible to provide strategies and skill-building directives to influence ethically defensible behavior throughout the science education program. Understanding which areas need attention is where development of recognizing intolerance begins and where it continues through instruction. The ability to recognize a situation as a violation of a student’s right to privacy or lack of confidentiality is the ability to recognize that a situation calls for moral judgment. In other words, being able to take the perspective of the other is the foundation upon which ethical sensitivity is developed.

Overall, qualitative analysis indicated the PS and IS groups gave a similar number of recognition of unethical behavior responses. No recognition of unethical behavior was the most frequent response given by PS participants and the least frequent response given by IS participants. Recognition of unethical behavior showing complexity of the issue was the most frequent response given by IS participants and the second most frequent response of PS participants. These findings suggest this study provides a lens for science teacher education programs when preparing candidates for teaching students of diverse multicultural and multilinguistic backgrounds.

Simulation affect. The affect of the simulation on participant responses was gathered via three post-simulation prompts. Most appreciated the interaction with the technology based-format. Responses suggest participants thought interaction with the virtual environment was helpful to “see” the issues being portrayed. Some felt “personally invested” by “walking and exploring things.” The most overarching emergent theme was the reflective nature of the simulation. Several participants wrote the simulation allowed them to respond more honestly to the prompts and not writing, “what they should say.” It allowed them the space to “evaluate myself and my feelings” and gave them a sense of being there to “get into the heads of the characters.” These examples represent the simulation as a reflective, interactive, and personal environment.

A possible explanation of the different quantitative and qualitative results lies in the difference between production and recognition responses. The in-simulation questions required the participants to produce their answers in their own words. They were not choosing from a provided set of responses. Their answers were then analyzed for evidence of identifying the ethical issues. The Quick-REST survey is a recognition task. The benefits of a recognition assessment are convenience and standardization (Sirin, Brabeck, Rogers-Sirin, 2003). However a recognition assessment does have inherent limitations. For example, participants may not understand the meaning of the question thus their answer may not reflect their knowledge of the information. Additionally, the question often provides information that may supply clues to the desired attitude or opinion. The participants may recognize the ethical dilemma after reading the question however would

not have without the clue. Was the PV group more adept at choosing the ethical violation? All participants answered the Quick-REST survey. The PS and IS groups answered in-simulation prompts immediately before the Quick-REST. Did producing an answer before choosing a response have an affect on their choice making?

The quantitative and qualitative data are not completely unsupportive of each other. The Quick-REST provides a broad raw score for the recognition of racial and gender intolerant behaviors, which has evaluative merit. Whereas the in-simulation prompts do supply information about specific skill remediation or proficiency. This insight is necessary for developing candidate recognition skills and “intermediate concepts” throughout their tenure in a science teacher education program.

Implications and Future Work

The Influence of Technology

Three post-simulation questions solicited responses regarding the perception of the affect of the simulation on participant answers. Responses were not split into comparison groups for analysis. The aim was to achieve a holistic picture of the simulation experience. The perception of the simulation varied; however more responses pointed to a reflective, interactive, and personal environment. The reflective environment and interaction with the environment were the two emergent themes.

The use of technology has increasingly become an extension of human intellect, imagination, and social interaction, especially in the classroom. The technological format used in this study was noted favorably by most. One participant recommended using the

simulation with teachers during orientation. The Free Software Licensing movement, known as Open Source, is a vehicle for collaborative application development. Making software source code publically available for those interested in its use, modification or redistribution is a philosophy that encourages collaboration. The software used for this study, *Virtuoso*, was a modified version of game engine open source code. The ability to freely modify and redistribute software has contributed to publicly shared intellectual property. Other types of collaborative efforts such as blogs, Twitter, and using wikis have much in common with Open Source practices. These activities, a way of life for some, could not function in the absence of collaboration. A report by the Pew Internet & American Life Project states the blogging population is young, evenly split between women and men and racially diverse (Lenhart & Fox, 2006). They site the main reason to keep a blog is for creative expression and sharing experiences. Blogs can have many writers collaborating in its creation. Twitter, is a combination of short text-messages in a blog format. The popularity of Twitter is its ability to be used from a cell phone; a computer is not needed. The power of blogs and Twitter is the real-time expression of opinions, thoughts, desires and experiences which can be used to inspire action. Wiki is a technology that allows many contributors to create, write, and edit a website. Wikis are based on the collective knowledge of the contributors, making them useful for course assignments. Technologies that are used for collaborative efforts can also be used in the classroom to learn from shared experiences. These types of technologies are quickly becoming the new face for learning and teaching in an education program partly because of collaborative practices. The

increased use of technology is also noted outside of the classroom. Another Pew Internet & American Life Project (Lenhart et al., 2008) finds virtually all American teenagers partake in gaming activities on a computer, console or cell phone. Many of the virtual game like simulations have cooperative or team-based play. Classrooms in the higher education arena are increasingly being filled with students who are adept and very familiar with the benefits of these technologies.

The simulation in this study was created to influence ethical sensitivity. Little quantitative evidence was found to suggest the simulation influenced preservice and inservice science teacher abilities to recognize racial and gender intolerant behaviors in school settings. What was noted through qualitative evidence was a fuller picture with finer distinctions of participant ability to recognize intolerant behaviors and a reflective environment. Some behaviors portrayed in the scenarios were recognized, however the complexity of the issue was often not evident in the responses. The desire to help the student was noted yet the ability to acknowledge the student's feelings or provide appropriate support was not. When the prompts supplied evidence of the unethical behavior more participant responses revealed their ability to recognize the issue. However less structured prompts disclosed a lack of recognition of unethical behavior. Evidence suggests the chosen technology did not influence participant ethical sensitivity however it might have influenced reflective practices. The reflective nature of the simulated REST can be self-serving without interactions with others. It does however provide a baseline to compare development and evaluation of skills. Huff and Frey (2005) note moral insight and skill

building can be influenced and formulated through collaborative interactions with others. The simulation, in addition to a technology based on collaboration, is an area of future research.

Science Teacher Education Programs

More than half of all participants attended multicultural or ethics workshops as part of their professional training. This distribution was similar across the in-simulation questions for each REST scoring category. The depth or breadth of the professional development was out of the scope of this study. However the information is useful to note that this study goes beyond these courses and shows potential areas for skill building and the necessity to evaluate and influence the development of racial and gender ethical sensitivity. A goal of science teacher education programs needs to be fostering ethical sensitivity to intolerance as a key element of professionalism during the program.

Standards, guidelines and recommendations set forth by professional education and science education organizations such as INTASC, NCATE, NSTA, NSES, and SFAA aim science educators toward developing and demonstrating knowledge of diverse cultures, relating science to the stakeholders in the community, valuing cultural heritage, and respecting student worldviews when selecting and developing lessons (AAAS, 1989; INTASC, 1992; NCATE, 2006; NSES, 1996; NSTA, 2007). Science education programs are charged with providing appropriate curriculum, field and clinical practice that “help candidates confront issues of diversity that affect teaching and student learning and develop strategies for improving student learning and candidates’ effectiveness as teachers.”

(NCATE, 2006, p. 31). Demonstration of these responsibilities can appear daunting in today's multicultural and multilingual classrooms. In a span of ten years, 1993 to 2003, the percentage of students of color increased from 34% to 41% in public elementary and secondary classrooms. Hispanics which comprise any race are multicultural. Their country of origin can be but is not limited to, Cuba, Puerto Rico, Caribbean Islands, Spain, and the countries of Latin American and South America. Hispanic populations have increased in school systems across all locale categories. In public elementary and secondary classrooms the percentage of Hispanics increased in cities from 21% to 30%; in urban fringes from 12% to 18%; in towns from 8% to 12%; and in rural areas from 4% to 7% between 1993 and 2003 (http://nces.ed.gov/pubs2007/minoritytrends/tables/table_7_1.asp?referrer=report). All other ethnic groups, African American, Asian/Pacific Islander, and American Indian/Alaska Native and Caucasian have either remained the same or decreased in at least one locale category. Demonstrating cultural knowledge of our students and respecting their cultural heritage and identity can be challenging due to our unfamiliarity with cultural backgrounds and the rapid increased change in student demographics. Development of ethical sensitivity demonstrated by recognition of intolerant behaviors addresses the educator professional's responsibility to respect and show dignity for cultural differences.

Both Bebeau and Brabeck posit ethically defensible actions may be improved with instruction. The inability to recognize intolerance can be viewed as a lack in "intermediate concept" skills that need remediation. The science teacher professional can use gained skills to build a socially just teaching and learning environment where cultures borrow from and

adapt to each other. Brabeck et al., (2000), the developers of the REST, “reason that if aspiring professionals understand that their professions expect and require certain kinds of ethically defensible behavior, they are more likely to adopt these behaviors,” (p.223).

Encouraging tolerance by means of adherence to professional ethical codes sets a standard of fairness and may circumvent belief systems that interfere with cultural acceptance.

Ethics curriculum aimed at influencing professionalism exists in other professional education programs (e.g., nursing, dentistry, and engineering) and can be used as a model for science teacher education programs. The focus should be on inservice science teachers as well. Extensive research using the DIT indicates a college course in ethics can affect moderate change in moral reasoning (Rest & Narvaez, 1994). Additionally, an older non-traditional student is more likely to experience moral growth than a traditionally aged college student (McNeel, 1994).

Future Work

There are some areas of future work specifically related to the limitations of this study as stated in chapter one. First, a pre-assessment was not performed; the next step in this line of research would be determination of participant stage of moral development prior to the study. Second, familiarity with gaming environments was not determined. Individuals with prior knowledge of virtual environment strategies may have had an advantage when compared to those with no or limited gaming experience. The amount of gaming experience may have affected cognitive load within the simulation environment (Sweller, 1988).

Lastly, an additional survey question to ascertain if participants volunteered or were

required to attend professional development courses for multicultural issues and/or ethics workshops.

Several areas of interest may lead to contributions in professional ethics and professionalism for science educators. The following recommendations come from the researcher's desire to incorporate a science curriculum program for professional ethics with attention to ethical sensitivity to intolerant behaviors in school settings. My area of interest is in merging reflective with collaborative technology-based environments and their use throughout a semester course. The reflective nature of the simulation was positively noted however reflections can be challenged and supported through collaboration. This can be done in group discussions built around case studies where candidates take the role of the educator, make decisions, argue using examples, identify ethical principles and the impact of others involved in the situation. Prior to this a baseline assessment would determine individual areas of strength and reveal areas which need development. A course of action for the case studies can be constructed with identified ethical codes. Candidates can be evaluated over the course in multiple roles and counseled on their development. Specific skills can be noted and aimed for remediation based on case study performance and pre-assessments. Case studies can vary not only in topic but also in how the case is used. For example, Huff and Frey (2005) notes the difference between "evaluative vs. participative" cases. Two perspectives can be discussed in these cases, one from the role of one of the participants, the other from the role of evaluating the participants and their deeds. These

cases are useful for introducing and practicing ethical principles and concepts. This model can be expanded and elements incorporated throughout the science education program.

Under the umbrella of an ethics curriculum several components of ethical sensitivity can be researched. Participant responses can be analyzed for specific skills. Interest and attention would be given to Brabeck's elements for ethical sensitivity for educators (a) verbal and nonverbal behavior; (b) identifying the needs or wants of others in the situation; (c) predicting other's reactions to help; and (d) responding with appropriate concern.

Informed by this study and others aiming for equitable learning environments for culturally diverse student populations and professional teaching practices I envision identification and skill building of these elements in a reflective collaborative technology-based format. In so doing to maintain the initial goal of this study; moving beyond tolerance to acceptance of and borrowing from diverse student cultures in science teaching and learning environments.

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APPENDIXES

APPENDIX A: IRB CONSENT FORM

North Carolina State University INFORMED CONSENT FORM for RESEARCH

Title of Study

Ethical Sensitivity Intervention in Science Teacher Education: Using Computer-based Simulations and Professional Codes of Ethics

Principal Investigator Shawn Y. Holmes, DMD

Faculty Sponsor Leonard A. Annetta, PhD

We are asking you to participate in a research study. The purpose of this study is to learn more about how preservice and inservice teachers see gender and racial intolerant behavior seen in a video versus in a simulation.

INFORMATION

If you agree to participate in this study, you will be asked to answer one survey questionnaire concerning your multicultural experiences. You will then watch two videos or “play” two simulations both will be followed by a survey questionnaire concerning what you saw in the videos/simulation. The videos/simulations are scenarios in a school setting. The aim is to compare your ability to recognize gender and racial intolerant behavior from a video versus a simulation. You will be asked some demographic information about yourself. Following this you may be randomly chosen to participate in a focus groups discussion. During the discussions you will be asked to elaborate on what you noticed in the video or simulation. The total time for survey questionnaires, videos/simulation and discussion group will be approximately three hours.

RISKS

There are no known risks for participation in this study. The survey questions and focus group discussion are geared to uncover any concerns.

BENEFITS

You may increase your ability to recognize gender and racial intolerant behavior in school settings. This will be a benefit as you will act in ethically defensive ways at school sites and may influence colleagues’ behavior as well. You may become a better advocate for students and this may also influence your students positively as teachers are role models.

CONFIDENTIALITY

The information in the study records will be kept strictly confidential. Data will be stored securely in All audio and video will be stored electronically in external hard drives and will be destroyed by deleting and cleaning the external hard drive at the conclusion of the HI FIVES project. **No reference will be made in oral or written reports which could link you to the study.**

CONTACT

If you have questions at any time about the study or the procedures, you may contact the researcher, Shawn Y. Holmes, at Poe Hall room 326, or 919-280-7712.

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. David Kaber, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/515-3086) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148)

PARTICIPATION

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed at your request.

CONSENT

“I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may withdraw at any time.”

Subject's signature _____ Date _____

Investigator's signature _____ Date _____

APPENDIX B: IN-SIMULATION QUESTIONS

1. James is very upset and accuses you and administrators on knowing about Coach Nichols, how would you respond to James?
2. How would you counsel James? Write what you would say to him.
3. How would YOU respond to the students who made stereotypic remarks?
4. As Ms. Highland the new teacher, write what you would say (if anything) in response to Mr. Lynch's comment about Latinas?
5. As Ms. Highland the new teacher, what if anything, disturbs you about this conversation?

APPENDIX C: QUICK-REST BASKETBALL PRACTICE

Developers: Selcuk Sirin and Brian Collins

INSTRUCTIONS: The following questions and based on the Basketball Practice scenario.

You may refer any notes you have taken.

	I	I	I'm	I	I
	strongly	tend to	not	tend to	strongly
	agree	agree	sure	disagree	disagree
1. I believe Coach Nichols was trying to be tough on everyone in order to make them play their best.	1	2	3	4	5
2. It was a good lesson for the rest of the team to see that Coach Nichols' did not let James get away with being late.	1	2	3	4	5
3. Mr. Elliot should speak up and bring the issue to the attention of proper administrative authorities.	1	2	3	4	5
4. Telling James to be 'more patient' and to 'stick it out' was helping him to be more realistic.	1	2	3	4	5

5. The School administration in allowing its faculty to act in this manner sends a powerful message that it stands by and condones such racist behavior. 1 2 3 4 5
8. By being tough, coach Nichols is modeling the importance of commitment and hard work. 1 2 3 4 5
9. Coach Nichols made James run laps and not Steve because even though Steve was making out on the bleachers, technically, he was on time. 1 2 3 4 5
16. Mr. Elliot should be noncommittal about the whole situation. He should let James and Coach Nichols sort out their differences. 1 2 3 4 5
18. The school has a responsibility to protect students from racist, sexist, or classist behavior. 1 2 3 4 5
21. It was acceptable and humorous when Coach Nichols called the basketball players “girls” and “ladies,” given the athletic atmosphere. 1 2 3 4 5
25. Coach Nichols’ attitude toward Coach Estevez is very apparent to all the people present and 1 2 3 4 5

may have an effect on the performance and attitude of all those present.

26.By suggesting that James could only be successful in college through sports, Mr. Elliot displayed racial biases. 1 2 3 4 5

28.Calling men “girls” and “ladies” is sexist because it implies that women are the weaker sex. 1 2 3 4 5

34.Mr. Elliot seems to think that James is overreacting. He is not taking James’s anger, hurt, and feelings of injustice seriously. 1 2 3 4 5

35.Coach Nichols was rough with all of his players in order to draw them out and make them play to the best of their ability. 1 2 3 4 5

38.Mr. Elliot was sensitive to James’ complaints and feelings, and supported him. 1 2 3 4 5

41.Mr. Elliot tried to convince James he might not be able to attend college if he left the team, despite his straight A’s, this was unprofessional and insensitive. 1 2 3 4 5

48.The fact that Coach Nichols has been allowed 1 2 3 4 5

to coach demonstrates that the school is not
doing enough to prevent inappropriate
behavior.

Demographic Questions

Please answer all questions to the best of your ability.

1. Place code number here _____
2. What is today's date __/__/_____
3. Are you a teacher? ___Y ___N
4. If yes, how many hours a week do you teach? _____
5. What grade level are you currently teaching? _____
6. Do you teach a bilingual class? ___Y ___N
7. If yes, what language? _____
8. Are you a student teacher? ___Y ___N
9. Have you ever worked with minority students in a school setting? ___Y ___N
10. If yes, what is your estimate of the total percentage of minority students in your classes?
11. Do you have children? ___Y ___N
12. What is your gender? ___M ___F
13. Where do you live? ___urban ___suburban ___rural
14. What is the highest level of education you have completed?

High school	Bachelor degree	PhD/EdD
Associate degree	Master degree	
15. Are you a student? ___Y ___N
16. If yes, are you part-time or full-time? _____
17. What is your estimate of the percentage of minority students in your class? _____
18. Estimate the percentage of minorities in your high school graduating class? _____

19. What was your first language? _____

20. What additional languages do you speak (other than English)?

21. What language(s) do you usually speak at home?

English only

Another language more than

English more than another

English

language

22. Are you attending an educational program? (Please check all that apply)

Completion of bachelor degree

Teacher license only

No

Courses for completion of

Courses for completion of

master degree

PhD/EdD

23. Your age _____

24. What is your approximate household income?

0 – \$25,000

\$25,001 - \$40,000

\$40,001 - \$55,000

\$55,001 - \$70,000

Above \$70,001

25. How do you classify yourself, your mother and your father with respect to ethnicity?

Ethnic Group	Yourself	Mother	Father
--------------	----------	--------	--------

Arab

African

African American

West Indian

Asian

Asian-Southeastern

Asian American

Latino/a

Middle Eastern

Native American

Pacific Islander

White/Euro-American

Other (*specify*)

26. What is your mother's highest level of education? Do not know _____

Less than 7th grade

Some college/technical school

7th grade - 9th grade

Completed 2 year degree

10th grade – 11th grade

Completed 4 year degree

Completed high school

Some formal education beyond college

Completed GED

Completed advanced degree

Your experiences with issues of multiculturalism

1. Have you taken an entire course on multicultural issues? ___Y ___N

Name of course _____

Semester/year course taken _____

2. Have you taken an entire course on ethical issues? ___Y ___N

Name of course _____

Semester/year course taken _____

3. Have you attended workshops dealing with multicultural and ethical issues? ___Y ___N

Name of workshop _____

Year attended workshop _____

Name of workshop _____

Year attended workshop _____

4. Please explain any other personal or professional experiences in dealing with multicultural and ethical issues?

APPENDIX D: QUICK-REST FACULTY LOUNGE

Developers: Selcuk Sirin and Brian Collins

INSTRUCTIONS: The following questions and based on the Basketball Practice scenario.

You may refer any notes you have taken.

	I strongly I agree	I'm not I tend to sure agree	I tend to disagree	I strongly disagree	
1. The personal details of Lourdes' life should only be discussed in a professional manner.	1	2	3	4	5
2. Ms. Parker seems to be well educated on multicultural issues.	1	2	3	4	5
3. Ms. Parker has a moral responsibility to correct the students who were making negative comments about Latina girls.	1	2	3	4	5
4. I feel Ms. Highland was treated professionally by Ms. Parker.	1	2	3	4	5
5. Ms Parker has been trying her best to	1	2	3	4	5

encourage Lourdes by making an extra effort to identify her problems and address them.

- | | | | | | |
|--|---|---|---|---|---|
| 6. Ms. Highland needs to realize that | 1 | 2 | 3 | 4 | 5 |
| though her position makes her a little vulnerable, she is not powerless to bring about a positive change in the situation being discussed. | | | | | |
| 7. Ms. Parker is just as guilty as the students who were making racist statements about Latina girls because she didn't correct them. | 1 | 2 | 3 | 4 | 5 |
| 8. Ms Parker is condescending and unwilling to believe that a new faculty member could actually have information that she is unaware of. | 1 | 2 | 3 | 4 | 5 |
| 9. If I were Ms. Highland, I wouldn't speak up because it is very hard as a new faculty member to bring up sensitive topics. | 1 | 2 | 3 | 4 | 5 |
| 10. Mr. Lynch is not seeing Lourdes as an | 1 | 2 | 3 | 4 | 5 |

individual with unique needs, but
instead as a cultural stereotype.

- | | | | | | |
|--|---|---|---|---|---|
| 11. Ms. Parker should not be working
with students if she is unwilling to
learn about important cultural
differences. | 1 | 2 | 3 | 4 | 5 |
| 12. Mr. Lynch really needs to step up his
level of awareness about different
cultures and the impact that different
backgrounds have on individual
performances. | 1 | 2 | 3 | 4 | 5 |
| 13. Since all the people involved in this
discussion are professionals, I feel
there is no violation of confidentiality. | 1 | 2 | 3 | 4 | 5 |
| 14. Mr. Lynch seems to be well educated
on multicultural issues. | 1 | 2 | 3 | 4 | 5 |
| 15. By not speaking up when the girls are
gossiping in the hallway Ms. Parker is
in effect condoning the overheard
views. | 1 | 2 | 3 | 4 | 5 |
| 16. Even if this could affect Ms. | 1 | 2 | 3 | 4 | 5 |

Highland's reputation at the new
school, she must speak up for

Lourdes.

17. Mr. Lynch would be more effective if 1 2 3 4 5
he took the time to get to know his
students.

18. Ms Parker lacks self awareness and 1 2 3 4 5
makes sweeping generalizations about
Latinas.

APPENDIX E: POST-SIMULATION QUESTIONS

1. What was this experience like you?
2. Speculate how this experience might be different from viewing a video?
3. How might these differences affect your responses?

APPENDIX F: STUDY PACKET

Technology Considerations

Thank you for volunteering to participate in this study on teacher education.

My goal is to help educate teachers about ethics and professionalism which in turn can influence how they teach.

The study is looking at your responses based on if you are in the video group or the simulation group. I am not studying the technology which runs the simulation. The software is still in its infancy therefore it is very important for those of you in the simulation group to NOT touch the mouse or press any keyboard buttons unless you are instructed to do so.

Most people have a tendency to keep their hands on the keys or the mouse. Please refrain from doing this.

- During the simulation you will be asked to move around and click buttons
- Once you have moved or clicked a button please remove your hands from the mouse and/or keyboard
- The volume has been set in the mid-range please refrain from adjusting it

Reason: The code in the programming of the simulation restricts your movement and allows movement. If your hands are on the mouse or keyboard causing movement when they should not be, the programming code will skip out of sequence causing the video and audio to be out of alignment. You will see and hear things out of order making it difficult for you to answer the questions.

Following these instructions will lessen the effects of the technology on your answers, thank you.

Study Procedures

Thank you for volunteering to participate in this study on teacher education.

My goal is to help educate teachers about ethics and professionalism which in turn can influence how they teach.

Procedures for REST Video participants:

See post-it for your code number-

1. Watch Basketball Video

2. Click Basketball survey

Complete survey (18) and demographic questions (25)

3. Watch Faculty Lounge Video

4. Click Faculty Lounge survey

Complete survey questions (18) and multicultural questions (20)

5. Click Multicultural Experience Questionnaire survey

Complete all survey questions (29)

Procedures for REST Simulation participants:

Log-in screen for *Virtuoso*: see post-it for player name, H5 name, and password

For surveys use player name as code number

1. Participate in Basketball Simulation

2. Click Basketball survey

Complete survey (18) and demographic questions (25)

3. Participate in Faculty Lounge Simulation

4. Click Faculty Lounge survey

Complete survey questions (18) and multicultural questions (20)

5. Click Multicultural Experiences Questionnaire survey

Complete survey questions (29)

6. Complete Simulation Experience (3)

HAZELTON HIGH SIMULATION
REFERENCE CARD

Key	Direction
S	Move <i>backward</i>
W	Move <i>forward</i>
A	Move to <i>left</i>
D	Move to <i>right</i>
Right click-hold (Mouse)	<i>Turn</i>

Note: In order to provide you the best vantage point, your movement **will be restricted during the scenarios.*

Characters

Mr. Delaney – school administrator

Basketball Practice

Mr. Elliot-student counselor

Coach Nichols-basketball coach

Asst. Coach Estevez

James- student

Faculty Lounge

Mr. Lynch - teacher

Ms. Parker - social worker (white sweater)

Ms. Highland – new teacher (blue dress)