How My Thesis Came About

Heather R. Hampton
How My Thesis Came About

Institutions of higher learning are so focused on in-class book learning that students often leave without ever gaining any practical experience. The real world is based on practical experiences which one cannot obtain from a book. Students often leave college without being prepared to tackle real-world tasks due to their lack of experience. I would have been one of these graduates had I not fallen into this thesis.

My journey down the thesis road began during the fall semester of my junior year. During this semester I was taking child psychology from Dr. Beverly King. I began a research project on the effects of gender inequality on development to fulfill my literature review requirement in the class. By the end of my extensive literature review, I was shocked about and enthralled with the fact that extreme inequalities still occur in education today.

The following semester of my junior year, I took the honors colloquium, math 388, titled Women and Mathematics. This class focused on women in mathematics as well as the inequalities that still occur in the system. I started to develop a strong sense that many women are discriminated against within the sciences. For the class, each student had to complete an outreach project. Dana Laas of the mathematics department and I were both interested in inequality within education so we decided to see how prevalent it is in our area.

Our research design consisted of two surveys and classroom observations. One survey was given to students after their class was observed on an average teaching day. The other survey was mass-mailed to teachers and professors in the area. Permission had to be obtained from the school board and the Institutional Review Board before our data could be collected. An
extensive literature review was also conducted prior to data collection.

After compiling our results, we presented them to faculty and students at the undergraduate colloquium series held by the mathematics department. We were worried about how the professors would react to what we had to say. They were very receptive and asked quite a few questions which we discussed in length. We received a lot of positive feedback following our presentation and felt that our discussion led professors to think about their own teaching styles and how they can promote equality in the classroom.

The professor of the women and mathematics course, Dr. Krystina Leganza, was speaking at a conference about her class during the semester break of our senior year. She decided to take Dana and I with her to speak for a few minutes about our reactions to the course. Since we were already attending the conference, we decided to submit our paper on gender inequality in mathematics. The paper was accepted and in January of the following year, we presented our paper at the International Women in Higher Education Conference. The conference was wonderful and it gave us a chance as undergraduates not only to present at a professional conference but also to get our results published in the proceedings. We were surprised and pleased to learn that we won third prize in the student category for our presentation.

Finally, we decided to expand the study and use the results for our honors thesis. It has now grown to great proportions and has given us unlimited exposure to conducting research including getting permission, obtaining participants, writing professional papers and presenting at conferences. This project began as a small outreach to our community and ended up opening a plethora of opportunities for us that most undergraduates never experience.

Going through the process of creating and writing this thesis has helped me decide what I
want to do after graduation. Through my readings, I have developed an interest in the socialization of adolescent girls and how they lose their sense of self when they reach the teenage years. I have also learned that education is very powerful, not only in the skills you gain through text books but the socialization that takes place and the impact of the ‘hidden curriculum’ on students. I not only want to work with adolescent girls but also in reforming the educational system as well as educating the public about gender inequities and how to detect them.

This thesis enhanced my educational experience, made me more marketable in the workforce and on graduate school applications and helped me become aware of the issues surrounding access to an equal education. Our research has reinforced and enhanced my feminist identity.

I would recommend that every student conduct their own research during the undergraduate years. The benefits are too many to name. I feel that I will be better prepared to tackle the workforce since I have gained practical knowledge. My honors thesis gave me direction, a sense of achievement, raised my self-esteem and helped me develop into a well-rounded contentious citizen.
Acknowledgments

I would like to thank:

- **Dr. Beverly King** of the Psychology Department for getting me interested in the topic to begin with and for being a patient understanding advisor.

- **Dr. Krystina Leganza** of the Mathematics Department for giving me all of these wonderful opportunities including the chance to present the results, I had a wonderful time in Texas.

- **Dr. Kim Jones-Owen** of the Women and Gender Studies Program for giving me resources and listening to me complain about the project as well as for helping me find funding for Texas.

- **Dr. David Morris** of the Sociology Department for going over the questionnaires and giving suggestions time and again.

- **Dr. Rebecca Pierce** of the Mathematics Department for giving us advise about statistical tests and analysis.

- **The Mathematics Department and the Office of Research** for making the trip to the Women in Higher Education conference monetarily possible.

- **Dr. Roebuck and Dr. Nelson** for giving us the opportunity to present the results of our pilot study in the Undergraduate Colloquium Series.

- **The participants** of the study.

- **Brian Lerner** for being the most helpful boyfriend a gal can have.

- And especially to **Dana S. Laas** for dealing with my complaints, putting up with me when everything was going wrong, for being a wonderful co-everything and most of all for being the best friend possible. None of this would have happened without you!
An Honors Thesis

by

Heather R. Hampton

and

Dana S. Laas

Thesis advisors

Dr. Beverly King

Dr. Krystina Leganza

Ball State University

Muncie, Indiana

April 1997

Expected date of graduation

May 1997
Gender Inequality in Education and Its Effect on Development

Gender inequality is a dilemma that still plagues the educational systems of America. The most significant factor enabling gender inequality is ignorance. Most teachers, parents, and even students are unaware that teaching and learning styles vary according to the gender of the student as well as the gender of the teacher thereby sending different messages to the students.

The study of gender inequality will hopefully lead to solutions to alleviate the problem. These studies can help pinpoint where the inequalities occur. Educators can then be made aware of how they perpetuate the problem. Awareness of inequitable gender treatment will increase the likelihood that the frequency of actions contradicting equality will be lessened or eliminated.

Prior Research

Several perspectives exist on the effects of gender inequalities in education. Some argue that gender inequality in education exists due to differences in gender and the subsequent effect on achievement (Baker & Jones, 1993). Some argue that gender inequality in education occurs because of biased teaching tools (Sadker, Sadker, & Stulberg, 1993). Sadker, Sadker and Stulberg (1993) found that many subtle behaviors occur in classrooms to create gender inequalities. The “hidden curriculum” pertains to these behaviors. “The ‘hidden curriculum’ comprises the unstated lessons that students learn in school...” (Orenstein, 1994, p.5)

One example of the hidden curriculum is that boys receive more of the teacher’s attention. This occurs because girls are seen as ideal pupils. Girls are “orderly, conforming, and dependent” so teachers give more attention to the assertive, active, usually male students to try to shape them into ideal students (AAUW, 1989, p. 45). Another example is that meaningful responses are usually directed at boys while girls are given more vague reactions. “The interaction between teachers and students is interladen with subtle messages...Research shows
that teachers do spend more time with girls in reading classes and more time with boys in math classes” (AAUW, 1989, p.14).

The hidden curriculum also affects boys because “boys...may be learning an unfortunate self-centeredness along with a lack of respect for their female classmates” (Orenstein, 1994, p.14). Boys avoid classes such as home economics because they are seen as female dominated classes and thus, a class for slower students. This attitude likewise limits career choices for boys. With gender equity, boys and girls would interact more which would give them a chance to understand how the opposite sex operates.

Other examples of the hidden curriculum found by the American Association of University Women (1989) lie in teacher-student communication. Teachers ask boys more abstract questions, thus giving them a chance at more active learning. Girls are usually told the answers or are prompted for the answer, which gives them less of a chance to learn independently. Teachers talk more to boys because boys are more likely to yell out answers in class. One study found that “boys were eight times more likely than girls to call out during a discussion” (Sadker, Sadker, & Stulberg, 1993, p.45). When girls called out, they were scolded and told to remember to raise their hands. This encourages girls to be quiet in class and boys actively learn the material.

The study of gender comparisons on mathematical attitudes and effect found that differences between the sexes and how the sexes perceive each other also reinforce the message that boys and girls are not equal. Girls usually pursue relationships and spend less time on academics when they reach adolescence (AAUW, 1989). Studying less lowers their grades. Because our schools judge students based on standardized test scores and grades, lower grades
suggest lower intelligence. These subtle behaviors can have a devastating effect on students' development.

Internal as well as external influences help determine which learning experiences students have (Hyde, Fennema, Ryan, Frost, & Hopp, 1990). The American Association of University Women (1989) found that gender differences in areas such as mathematics increase anxiety for girls. This anxiety, generated internally, leads to lower confidence in ability. Girls are also more likely to believe that lack of ability is the reason for lower performance; therefore, an increase in performance cannot be achieved with more effort. Boys, on the contrary, believe that lack of effort correlates with poor performance (AAUW, 1989). Girls usually do not get a chance to work independently which lowers their chances of developing skills such as initiative, problem-solving and risk-taking (AAUW, 1989). All of these factors encourage girls to take less challenging classes or to take fewer male dominated classes such as mathematics. These boundaries also limit career choices. Having fewer scientific classes bars admittance into technological careers.

Current research is focusing more on solving the gender inequality problem where past research was working to show that there is a problem. Several researchers have developed ways to decrease inequalities.

Sadker and Sadker focused on improving teaching strategies to decrease inequalities. Researchers videotape teachers during a regular school day, and then watch the tape with the teachers to define where the inequalities occur. Prospective teachers are now studying how inequality occurs in the classroom so they can avoid creating discrepancies in their classrooms (Sadker and Sadker, 1982 & 1994). Other suggestions found by Sadker and Sadker and Stulberg
is to increase the wait time for answers to questions so everyone has a chance to answer.

Another suggestion is for teachers to separate instruction time from management, which will pull some of the attention off the boys and distribute the attention equally to both boys and girls.

Desegregating the classroom will help prevent the teacher from lecturing primarily to one gender. Increasing mobility and teaching in more than one area of the classroom also prevents the teacher from lecturing to the same children.

As suggested by the American Association of University Women, schools need to broaden their perspective on acceptable behaviors in the classroom. This would help because students may sport many different attitudes as they deal with an onslaught of problems that begins at the threshold of adolescence. For example, when a girl does not adhere to the traditional format of the ideal student, instead of reprimanding her for the atypical behavior, schools can help girls utilize this energy in a positive manner. Since boys' athletics already has more support from the media and from society as a whole, supporting girls' athletics and encouraging them to assume leadership positions are two strategies that can optimize their excess energy. This is not to say that a teacher should condone rowdy behavior in the classroom, but only to help channel the energy in more positive directions (AAUW, 1996).

Another technique for decreasing inequality found by the American Association of University Women (1996) is the implementation of a mentorship program at the school. A repertoire of guest speakers that include successful women can have a major impact on a young person's life. Mentoring helps form the foundation for career building. Ever modeling and remodeling themselves after people with whom they interact, adolescents need to see successful people as blueprints. Any career-oriented person, such as a politician, an engineer, or a military
person, sharing her/his experiences with adolescents would shape their life profoundly. Currently, boys are already seeing many successful men as mentors, so female role models are necessary to provide both boys and girls with the tools needed to succeed in life. The American Association of University Women also suggests that schools need to provide equal access to all resources for both sexes, use cooperative learning techniques, and teach about how gender-role stereotypes limit lives (AAUW, 1989).

Other researchers consulted students and observed teachers to devise strategies. In the Cummings (1994) study, students made suggestions to decrease the gender inequality such as: more math for girls and more English for boys, incorporate more feeling in subjects like math by using more language, and make subjects enjoyable to both sexes. Attending a women's school is said to make a difference in women's aspirations at the college level. “Students in women's colleges were more likely than those in coed schools to maintain, and even increase, their high aspirations and to persist to graduation” (Lott, 1994, p.82). A predominant theme through all of the research is that teachers need more courses in psychology to better understand the motivations of their students.

One study gathered data by interviewing the students and looked at the differences between the genders as perceived by the students themselves. In this study, assessment tests were given to both junior high and high school girls and boys. The boys consistently outscored the girls by as many as 60 points in mathematics. Girls outperformed boys in English by as many as 80 points and outperformed boys by as many as 114 points in writing (Cummings, 1994).
In another study, two exams were given to students which enabled researchers to construct the national means according to sex. Next, surveys were given to determine what material was covered by teachers, to gather background information from students, and to determine parental involvement. These surveys were given to determine if gender stratification of opportunity is a primary factor in academic achievement differences between boys and girls. The mean score of women was subtracted from the mean score of men to find the sex difference. The results showed that less than a one-half of one item advantage for boys. The results also confirmed the researcher's prediction that "As females gain more access to advanced training and to the work place...sex differences in mathematical performance decrease." (Baker & Jones, 1993, p. 96).

In some studies, a meta-analysis was used to get results by pooling the statistics from many other studies. One meta-analysis resulted in the discovery that males stereotype subjects such as mathematics as masculine much more than females do. One reason why females are not as active in advanced mathematics education indicates that stereotyping is an important factor (Hyde, 1990).

All research has some limitations. The limitations of the above mentioned studies are that most data gathered consisted of self-reports or self-perception. If one interviews a child who does not happen to like her or his teacher or class, the child may give answers that seem to indicate gender inequality when in fact, that particular child is just unhappy with her or his environment. The research that uses surveys of parents may not be a true representation due to parental bias. With all of these limitations, pinpointing the causes of gender inequality is extremely difficult.
A strong point of most of the studies that have already been conducted is that a large sample size was used. Other positive features are that the tests have the same results when administered repeatedly and different methods were used to draw the same conclusions.

**Participants**

Participants were 178 students and 71 teachers. The 27 students in middle school and the 65 students in high school were selected and assigned by the school board according to availability and time constraints. The principal of each assigned school recruited teacher volunteers through an office memorandum. The principal then informed the researchers of available time slots and observation times were arranged.

The 86 students in college were collected out of a selected pool of college students in science, mathematics, and English classes. Professors within each department were contacted by the researchers to arrange observation times according to time constraints. One hundred and five female students participated and 73 male students participated.

The teachers and professors that participated in the study came from a systematically selected sample. The faculty phone directory at a midwestern university and the on-site laboratory school and academy was used to generate a list of participants. Every fourth entry received a survey in the mail. The teachers at the middle and high school levels, filled out a questionnaire along with their students. Forty female teachers and 31 male teachers anonymously returned a questionnaire.
Materials and Procedures

In the present study, sex discrimination was used to measure gender inequality. If sex discrimination is occurring, then one group is treated differently. Therefore, they are not receiving equal treatment, so gender inequality occurs.

Two questionnaires were used in the present study. One questionnaire was given to students in the sample which measured the subjects' feelings of discrimination within education and their outlook on specific types of classes. The other questionnaire was given to the teachers in the sample and was used to measure the change in discrimination within education over time.

The student questionnaire contained 16 questions (see Appendix 1). Questions 1 and 2 asked if the student has ever felt discriminated against in school, and if so, why. Questions 3 through 11 measured what type of subjects were studied, best liked, and the level of difficulty within that subject to determine the students' outlook on different types of classes such as mathematics, science, and English. The last 5 questions were used to determine the sex of the student and their performance in the class being surveyed.

Every teacher and professor received the same questionnaire that contained 10 questions (see Appendix 2). Questions 1 and 2 queried if the educator ever felt discriminated against while they were in school, and if so, why. Questions 3 through 7 measured the change in discrimination over time. Questions 8 through 10 were used to determine the sex of the teacher as well as the level of educational achievement and subject areas taught by the teacher.

The student questionnaire was filled out during a class session following classroom observation by a researcher. Participation in the study was voluntary and the subjects could terminate participation in the study at any time with no penalty. The students who were older
than 18 years and the parents or legal guardians of the children signed a consent form to grant the researchers permission to survey the children (see Appendix 3). The subject was given a questionnaire and then the instructions were read to them (see Appendix 4). After the subjects completed the questionnaire, they put them in a folder to ensure the results were kept anonymous.

The teacher questionnaire was mailed to selected teachers. A letter explaining the research was mailed along with the questionnaire so informed consent could be given (see Appendix 5). Participation was totally voluntary. If a teacher chose to participate, then she/he filled out the survey and mailed it back to the researchers. To ensure that the results remained anonymous, an envelope with the return address was sent along with the survey.

Results and Discussion

Ninety-two participants in the present study felt discriminated against. Fifty of these discrimination claims attributed the inequity to their sex, and 76% of sex discrimination claimants were female.

Beginning with the middle school sample, only one female out of 10 sensed any discrimination, which she characterized as age discrimination. Four out of 17 males felt discriminated against and one felt it was gender related. This seems to indicate that students are receiving more equitable treatment in the classroom. Another gauge, determined by the subjects students felt comfortable studying, indicated more gender equity for females in middle school than for their older counterparts. In the present study, females in middle school felt just as comfortable studying science and math as literature (see Graphs 1a - 2c).
On the contrary, males in middle school felt uncomfortable studying literature. One area in which educators need to focus is to encourage boys to study subjects that have traditionally been more appealing to girls (see Graph 2d).

In the high school sample, 10 females out of 38 perceived discrimination. Only four of these were related to gender (see Graphs 3a & 3b). However, with high school males, 16 out of 27 males reported discrimination of which 9 were due to gender (see Graphs 4a & 4b).

The female high school subjects in the present study were comfortable studying science, while the male high school subjects were comfortable with math. Fifty-seven percent of the females in the present study felt uncomfortable studying math, versus 37% for males (see Graphs 3c - 4d).

Within the college section of the present study, only four males out of 29 reported discrimination and two of those were sex discrimination claims. Examining the results from the female college participants, 50% of the 57 females felt discriminated against and 65% of these were gender related. Looking at which subjects the females felt comfortable studying, we found that 46 of the females were uncomfortable studying science, while the males felt equally uncomfortable studying literature and language (see Graphs 5a - 6d).

The next age group included teachers and professors. Nine of the 31 males and 19 of the 40 female respondents have perceived discrimination. Seventy-five percent of the females who perceived discrimination attributed the discrimination to their gender, while 0% of males attributed the discrimination to their gender. The females felt comfortable studying math and science. The males felt comfortable studying some other subject besides literature, math,
language or science. Among the subjects mentioned were business, physical education and music (see Graphs 7a - 8d).

The most prominent finding in the present study is the increase of gender discrimination in education with increased grade levels. The questionnaires asked students, teachers and professors if discrimination had ever occurred at any time during their schooling. This retrospective technique could account for the increased perception of gender discrimination due to the fact that the older the student, the more opportunity he or she had to experience discrimination within the classroom.

The results could be limited due to the subjects or the methods used. Since the middle and high school subjects were assigned to the researchers, the sample was not random. The college samples used were from selected classes. This would limit the randomness of the respondents from the college-age group as well. The teachers that responded to the survey could have felt strongly one way or the other, thus influencing their decision to respond. The teachers had to make a conscious decision to send the survey back which could result in a potentially biased sample.

The sample size was very small and obtained in a small Midwestern community. A small sample size may hinder the generalizability of the results.

Comprehension also could have altered the results. Some subjects, especially middle school students, did not have a firm understanding of the implications of the word “discrimination.” Some subjects may not yet be aware of discrimination even if they are a victim. The older the person, the more likely they are to be able to recognize discrimination.
Since a large percentage of the sample was in middle school and high school, the chance that discrimination has not yet been noticed is greatly increased.

The method of measurement could also come into question as well because questionnaires were used. Results from questionnaires cannot be totally trusted because of social desirability. Subjects could lie or exaggerate, which would alter the results.

The fact that the present study is not random discourages the use of statistical analysis. The teachers’ and professors’ experiences could be very different than the students’, therefore comparison of the means between these groups is not desirable. We have relied on percentages to show possible trends in education.

The present study is useful. The results show that gender inequalities still exist within education today. This finding could help teachers become aware of the effects their teaching techniques have on students. The study also makes educators aware of what is occurring so they can strive to reduce the frequency of inequities. By educating teachers and conducting research on discrimination in the classroom, awareness about discrimination may be increased among parents, students, teachers and the community.

Future research should examine the techniques used to solve gender inequality in education to see if they have actually decreased the frequency of discrimination. By studying this further, a solution to eliminate or lessen the problem could be developed. The most necessary asset in future research will be a more representative sample. Students and teachers in a Midwestern state are not very representative of the population as a whole. The same methods that were used in the present study could be used with a larger sample size in a wide range of demographic locations. The sample used should be a random, proportionate sample of the
population. The sample needs to be proportionate so every possible ethnicity, race and socioeconomic background is represented. These proportions can be obtained out of the census data. Equal representation will make the results more generalizable as well as realistic. With this study, a more complete picture can be drawn of why gender inequality still occurs in education and who it most likely affects.

When gender inequality is eradicated, children will have better communication skills, girls will set higher goals, and gender-roles as well as gender specific jobs will not be prominent. “Education has long been emphasized as a central factor in encouraging non-traditional gender attitudes” (Kane, 1995, p.74). Education also fosters tolerance. Educated people tend to grant civil liberties to others even if they do not always agree with them. Gender equality in education is the first step in reaching equality in the work place, in the home, and within society by destroying the barriers that separate the sexes. Without these barriers, the genders can cooperate to eliminate inequalities and create a truly free America.
References


Do not put your name on this survey. Please, circle or fill in the answer that best describes how you feel. You may skip any question that you feel uncomfortable with and may stop taking the survey at any time. This is voluntary. Thank you for participating. This is entirely voluntary.

1. Have you ever felt discriminated against in the classroom or in an educational setting such as not being called on, harassed, or discouraged by a person of authority?
   A. Yes (if yes, go to question 2).
   B. No (if no, go to question 3).
   C. I am not sure (if not sure, go to question 3).

2. Why do you feel you were discriminated against?
   A. Because of my sex
   B. Because of my age
   C. Because of my race/ethnicity
   D. I wasn't discriminated against
   E. other ____________

3. What subjects do you feel the most comfortable studying?
   A. Literature
   B. Math
   C. Language
   D. Science
   E. Other ________.

4. What subjects do you feel the most uneasy studying?
   A. Literature
   B. Math
   C. Language
   D. Science
   E. Other ________.

5. Please explain why you answered as you did on questions 3 and 4.
   A. I was encouraged more in literature and/or language.
   B. I was encouraged more in math and/or science.
   C. I just liked literature and/or language more.
   D. I just liked math and/or science more.
   E. I was discouraged in literature and/or language.
   F. I was discouraged in math and/or science.
   G. Other ________________.

6. Which statement sounds the most like you?
   A. I raise my hand & speak up in class.
   B. I speak up in class when I am called on but don't always raise my hand.
   C. I rarely speak out in class.
   D. I get so embarrassed when called on that I can hardly answer the question.
   E. Other __________________________.
7. What do you want to do after you graduate?
   A. Go on to college (if A, go to question 8).
   B. Get a job (if B, go to question 9).
   C. Go into the military (if C, go to question 9).
   D. Go to trade school (if D, go to question 8).
   E. Go to graduate school (if E, go to question 8).
   F. Other ___________________________ (if F, go to question 9).

8. What do you plan on studying in school?
   A. Something in the mathematical field.
   B. Something in the literature field.
   C. Something in a scientific field.
   D. Something in a language field.
   E. Other ____________________________.

9. How many literature classes have you taken at this institution?
   A. 0-1
   B. 2-4
   C. 5-7
   D. 8-10
   E. More than 10.

10. How many math classes have you taken at this institution?
    A. 0-1
    B. 2-4
    C. 5-7
    D. 8-10
    E. More than 10.

11. What is your favorite subject?
    A. Language
    B. Math
    C. Literature
    D. Science
    E. Other _________.

12. Gender
    A. Male
    B. Female

13. How old are you? ________ years old.

14. What grade are you in? ________ grade.

15. What is your Grade Point Average on a 4.0 scale? ________.

16. What grade do you expect to get in this class? ________.
Do not put your name on this survey. Please, circle or fill in the answer that best describes how you feel. You may skip any question that you feel uncomfortable with and may stop taking the survey at any time. This is voluntary. Thank you for participation. This is entirely voluntary.

1. Did you ever feel discriminated against while you were going through school?
   A. Yes
   B. No.

2. Why do you feel you were or weren’t discriminated against?
   A. Because of my sex
   B. Because of my age
   C. Because of my race
   D. I wasn’t discriminated against.
   E. Other ____________________.

3. What area of study if any do you feel you were encouraged in?
   A. Math
   B. Language
   C. Science
   D. Literature
   E. Other ________

4. What area of study if any do you feel you were discouraged in?
   A. Math
   B. Language
   C. Science
   D. Literature
   E. Other ________

5. Do you think the way children in the United States are taught has changed much within the school system since you were a student?
   A. Yes
   B. No

6. Why or why not and in what ways do you think it has changed?
   A) It has changed because of new teaching technologies
   B) It has changed because it had to due to differences in children caused by society and the times.
   C) It hasn’t changed significantly
   D) Other ____________________

7. Has it changed for the better?
   A) Yes
   B) No
   C) It hasn’t changed
   D) Other ____________________
8. Gender
   A. Male
   B. Female

9. Level of Education
   A. High School
   B. Trade school
   C. Associates
   D. Bachelors
   E. Masters
   F. Doctorate
   G. Seminary

10. Subjects you teach (If you are an elementary school teacher put down what grades you teach) ________________________________
To whom it may concern,

Dana Laas and Heather Hampton, two Ball State University students, are requesting your permission to give your son or daughter a survey about learning within mathematics & science as opposed to learning within literature & language.

We will be observing your son or daughter’s class as well as handing out a small survey that asks questions about the students’ classes.

We will explain the instructions to your son or daughter. They may stop taking the survey at any point if they feel uncomfortable. They may also not answer any questions that they do not feel comfortable answering.

(Student Name)

(Parent or guardians name)

(Date)
Appendix 4

Directions to filling out survey

This survey is being administered to learn about differences in education. We do not want anyone's name on the surveys. You may skip any question(s) that you do not feel comfortable answering. You may also stop taking the survey at any time if you are uncomfortable.

Just circle or fill in the answer that best describes you or how you feel.

Thank you for your help!

Heather Hampton
Dana Laas
Appendix 5

Informed Consent

The experiment in which you are about to participate is designed to investigate the changes in education inequalities over time. This experiment has been approved by the Institutional Review Board of Ball State University.

In this experiment you will be asked to fill out a questionnaire.

Please be assured that any information that you provide will be held in strict confidence by the researchers. At no time will your name be reported along with your responses. All data will be reported in group form only.

Please understand that your participation in this research is totally voluntary and you are free to withdraw at any time during this study without penalty, and to remove any data that you may have contributed.

I acknowledge that I have been informed of, and understand, the nature and purpose of this study, and I freely consent to participate. I acknowledge that I am at least 18 years of age.

Signed ____________________________________________.

Date _______________.
Middle School Females
Middle school females:
Have you ever been discriminated against?

Graph 1a.
Graph 1b:

Middle School Females
Reasons for Discrimination

sex    age    race/ethnicity    other
Subjects middle school females feel comfortable studying

Graph 1c.
Subjects middle school females feel uncomfortable studying

- literature
- math
- language
- science
- other
Middle School Males
Middle School Males
Reasons for Discrimination
Subjects middle school males feel comfortable studying

- Math: 9
- Language: 2
- Literature: 0
- Science: 7
- Other: 8
Subjects middle school males feel uncomfortable studying

Graph 2d

- literature
- math
- language
- science
- other
High School Females
High School Females Reasons for Discrimination
Graph 3c.

Subjects high school females feel comfortable studying

![Bar graph showing subjects high school females feel comfortable studying]

- Literature: 10
- Math: 14
- Language: 8
- Science: 16
- Other: 9
Subjects high school females feel uncomfortable studying

Graph 3d.

- literature
- math
- language
- science
- other
High School Males
High School Males: Have you ever been discriminated against?

Graph 4a.
High School Males
Reasons for Discrimination

Graph 4b.
Subjects high school males feel comfortable studying

- Literature: 4
- Math: 12
- Language: 3
- Science: 6
- Other: 8
Subjects high school males feel uncomfortable studying

Graph 4d.

- literature
- math
- language
- science
- other
College-aged Females
College-aged females:
Have you ever been discriminated against?

Graph 5a.
College Females Reasons for Discrimination

- sex
- age
- race/ethnicity
- ability level
- other

Graph 5b.
Subjects college-aged females feel comfortable studying

- Literature: 26
- Math: 30
- Language: 17
- Science: 12
- Other: 8
Subjects college-aged females feel uncomfortable studying

- literature
- math
- language
- science
- other

Graph 5d.
College-aged Males
College-aged males:
Have you ever been discriminated against?
College-aged males Reasons for Discrimination
Subjects college-aged males feel comfortable studying
Subjects college-aged males feel uncomfortable studying

- Literature
- Math
- Language
- Science
- Other
Female Professors
and Teachers
Graph 7a.

Female Professors and Teachers: Have you ever been discriminated against?
Female Professors and Teachers
Reasons for Discrimination

Graph 7b.
Subjects female professors and teachers felt comfortable studying

- Literature: 9
- Math: 17
- Language: 11
- Science: 18
- Other: 14
Subjects female professors and teachers felt uncomfortable studying

- literature
- math
- language
- science
- other
Male Professors
and Teachers
Male professors and teachers: Have you ever been discriminated against?
Male Professors and Teachers
Reasons for Discrimination
Subjects male professors and teachers felt comfortable studying

Graph 8c.

- literature
- math
- language
- science
- other
Subjects male professors and teachers felt uncomfortable studying

- literature
- math
- language
- science
- other
January 26, 1996

To Whom It May Concern:

Please be advised that Dana Laas and Heather Hampton have requested and received approval to do a research project entitled "Gender Inequality in Education." The purpose of this study is to determine if discrimination still occurs in the classroom because of gender.

The schools involved in this research project will be Southside High School and Northside Middle School.

If you have any questions, please feel free to contact me at 747-5207.

Sincerely,

M. Tim Heller
Assistant Superintendent/Instruction K-12
1. Title of Study: Gender Inequality in Education

2. Research Area:

3. Members of Study Committee and Areas of Expertise:

4. Purpose(s) of Study: Our purpose is to determine if discrimination still occurs in the classroom because of gender.

5. Attach copies of proposal abstract, measurement instruments, and description of method of treatment, as appropriate.

6. Selection of Participants:
   Number to be selected: __________________________
   How they will be selected: __________________________
   Grade Levels to Be Involved: __________________________
   Teacher(s) and School(s) Involved: __________________________

7. Requested Beginning Date: __________________________
   Approximate Closing Date: __________________________
8. **Materials**: Do you plan to administer any instruments of measurement such as tests, inventories, surveys, or self-constructed instruments? **YES X NO**

If so, list by title below, describe, and estimate the time involved in giving each. Who will administer these? (Enclose copies) **Gender Inequality in Education. The survey should only take 10 minutes.**

Heather Hampton and Dana Laas will administer these.

Do you plan to give any treatment to participants? **YES NO**

If so, describe in detail and estimate the time involved for each. Who will administer the treatment? (Enclose copies)

9. Describe the research design and statistical analysis (as appropriate) of your study:

We are using observation and survey methods.

10. Attach proposal or well developed synopsis.

11. Anticipated use to be made of study: Explain. We are enrolled in a Women in Mathematics course at Ball State University. We have designed this project to be an outreach project.

12. What value is the study to the Muncie Community Schools? We intend to address the issue of gender inequality. If an aberration occurs, the published results will make people, especially educators, more aware of the problem.

13. Is university credit sought? **YES NO**; do you plan to publish? **YES**

Doctoral degree? ______ Masters degree? ______ Post graduate work? ______

14. **Consent to Conduct Research in MCS**:

The researcher(s) will treat the results of this project with complete confidentiality. Particular schools/programs will not be named in the study, though it will be disclosed that the statistics were derived at a certain grade level, class, or classification (L.D., etc.) from a survey conducted among Muncie school personnel and students. Muncie Community Schools Research Office will receive a copy of the completed study, including an abstract which MCS may publish. The researcher(s) may be invited to share findings with MCS staff.

When students and staff are used as human subjects, written MCS consents from parents and adults are required.

Parents may withdraw consent for participation at any time. No student is at any risk by participating in this study.

Signature of Researcher(s): Dana L. Laas

11/88 hum:bb
TO: Heather Hampton and Dana Laas
Botsford Hall

FROM: Anthony Mahon, Chair
Institutional Review Board

DATE: February 8, 1996

RE: Human Subjects Protocol I.D. - IRB #96-146

Your protocol entitled "Gender Inequality in Education" has recently been approved as an exempt study by the Institutional Review Board. Such approval is in force during the project dates 2/8/96 to 5/4/96. IRB approval is contingent upon approval from the Muncie Community Schools.

It is the responsibility of the P.I. and/or faculty supervisor to inform the IRB:

- when the project is completed, or
- if the project is to be extended beyond the approved end date,
- if the project is modified,
- if the project encounters problems,
- if the project is discontinued.

Any of the above notifications should be addressed in writing to the Institutional Review Board, c/o the Office of Academic Research & Sponsored Programs (2100 Riverside Avenue). Please reference the above identification number in any communication to the IRB regarding this project. Be sure to allow sufficient time for extended approvals.

slm

pc: Krystina Leganza
TO: Heather R. Hampton  
4412 Stony Brook Drive  
Louisville, KY 40299

FROM: Anthony Mahon, Chair  
Institutional Review Board

DATE: May 16, 1996

RE: Human Subjects Protocol I.D. - IRB # 96-146R

Your recent request for the protocol "Gender Inequality in Education" to be reinstated has been approved by the IRB. Such approval is in force from 5/16/96 to 5/16/96. Please keep in mind that further modification or extension requests should be addressed in writing to the Institutional Review Board, c/o the Office of Academic Research & Sponsored Programs (2100 Riverside Avenue).

pc: Leganza
Gender Inequities in the Classroom

by

Dana Laas
and
Heather Hampton

Ball State Students
Ball State University

12:30 - 1:00
Thursday, April 4, 1996
RB 449
Heather Hampton,

Thank you for your presentation "Gender Inequities in the Classroom" in the 1995-1996 Undergraduate Colloquium Series of the Department of Mathematical Sciences. We appreciate the time and effort you spent preparing and presenting this talk.

The Undergraduate Colloquium Series provides an opportunity for students to be exposed to mathematics-related topics and questions outside the scope of the standard undergraduate program. This enriches their perspectives on mathematics, and provides valuable experience in the art of being a mathematician. Without the support of presenters like you, the series would not be possible.

Once again, thank you for your participation in this important aspect of the mathematics education of students at Ball State University.

Sincerely,

Roger Nelson

Kay Roebuck

E-Mail: d000math@bsuvc.bsu.edu  317-285-8640  Muncie, Indiana 47306-0490  Fax No. 317-285-1721
I am leaving this morning for New York and won't be back on campus until Wednesday afternoon. Just a quick update on Nov. 4:
Dr. Worthen will give the welcome at 9 am
I will give an information session at 9:15 am
Dr. Barbara Jone's session on Student Life will be at 9:45 am
Break at 10:00 am
Bruce's presentation on Honors College at 10:15 - 10:30 am
Joanne will moderate a panel on students involved in undergraduate research and creative projects from 10:30 - 11:00 am (and she will arrange for the students)
At 11:00 am Darren Bush will moderate a scholarship panel and Joanne will represent the Whitinger.
Academic Fair at 11:30 am
and at noon students will get lunch in the food court and bring it to Cardinal Hall - please invite faculty who teach in the Honors College to come and chat with these students and families over lunch - we will provide the faculty with tickets to the Food Court.
1:00 tour and at 2 pm and 3 pm students may attend class. Warren has provided a list of classes available at those times. I will check all of this with you when I get back. EC
Call for Papers

10th Annual
International Conference
Women in Higher Education
January 4-7, 1997
Fort Worth, Texas

The 10th Annual Women in Higher Education International Conference provides a forum for discussion of issues relevant to women in higher education, and opportunities to network, develop new contacts, and exchange information. Join students, faculty, and administrators from the U.S. and abroad in examining issues critical to the profession.

The conference planning and proposal review committee is soliciting papers from interested individuals in such areas as Mentoring, Equity Issues, Women in Their Disciplines, Non-Traditional Students, Women's Roles in Higher Education, Women in the Sciences, Support Systems, Career Mobility, Minority Women, Research Ventures, The Future, and other areas of interest. Papers on student and international issues and papers authored by students are encouraged. Awards to outstanding student papers will be given.

Abstract proposals of 50 words may be submitted through September 1, 1996.

For submittal and further information contact:
Nancy Wacker, Conference Coordinator
Division of Professional and Continuing Education
University of Texas at El Paso
500 West University
El Paso, Texas 79968-0602
915-747-5142 • FAX 915-747-5538
email to nwacker@mail.utep.edu
From:  IN%"nwacker@mail.utep.edu"  "Nancy Wacker"  26-SEP-1996 10:18:08,55
To:  IN%"00dslas@bsuvc.bsu.edu"
CC:  
Subj:  RE: abstract for conference

Return-path: <nwacker@mail.utep.edu>
Received: from mail.utep.edu (mail.utep.edu)
  by BSUVC.bsu.edu (PMDF V2.0-6 #10167) id <0119HX3A6X3K51WQIP@BSUVC.bsu.edu>
  for 00dslas@bsuvc.bsu.edu; Thu, 26 Sep 1996 10:17:47 -0500 (EST)
Received: from premdonna.utep.edu ([129.108.67.1]) by mail.utep.edu with SMTP
  (1.37.109.16/16.2) id A252791117; Thu, 26 Sep 1996 09:18:37 -0600
Date: Thu, 26 Sep 1996 09:18:37 -0600
From: Nancy Wacker <nwacker@mail.utep.edu>
Subject: Re: abstract for conference
X-Sender: nwacker@mail.utep.edu
To: 00dslas@bsuvc.bsu.edu
Message-id: <0119HX3AD2XU91WQIP@BSUVC.bsu.edu>
MIME-version: 1.0
X-Mailer: Windows Eudora Light Version 1.5.2
Content-type: text/plain; charset="us-ascii"
Content-transfer-encoding: 7BIT

I received your email and have your presentation scheduled in the conference. I need a complete mailing address and phone/fax for you and Heather for the database.
I will mail agendas and registration brochures in the next couple of weeks. Look forward to seeing you in Fort Worth.

At 01:36 PM 8/30/96 -0500, you wrote:
>Hello. My name is Dana Laas and the co-author of this paper is Heather
>Hamptorn. We would appreciate your consideration.
>
>Completion of a study comparing gender inequalities in the
>classroom from past and present and an extensive literature review
>formed the core of our paper entitled "Gender Inequality in Education and
>its Effect on Development." The paper discusses our tabulations from
>the study as well as interesting facts from our research.
>
>Nancy Wacker
Email:  nwacker@mail.utep.edu
Professional & Continuing Education
Assistant Director for Conferences and Special Events
University of Texas at El Paso
500 West University
El Paso, Texas 79968-0602
915-747-5142  Fax: 915-747-5538
May 29, 1996

Heather Hampton
Dept. of Mathematical Sciences
Ball State University
Muncie, IN 47306

Dear Ms. Hampton:

Thank you for your proposal for the Tenth Annual International Conference on Women in Higher Education. We are pleased that you wish to be part of the program. The Conference Program committee will be meeting in early September to plan the program and will notify you soon after about the status of your paper. As we understand that you must apply for travel funds early in the semester, we will attempt to get official word to you as soon as possible. If you do not hear from us by October 4, you can reach us at either (915) 747-5835 or e-mail mimigr@mail.utep.edu.

The 1997 conference will be held in Ft. Worth, Texas. Originally a "cow town" on the edge of the great plains, Ft. Worth is now home to world class museums, both the Kimball and Amon Carter, specializing in western art and a major university, Texas Christian University. The Radisson, our conference hotel, is in the heart of a new downtown cultural district. Ft. Worth is only a twenty minute drive from the Dallas/Ft. Worth airport, a major airline hub site.

We look forward to meeting with students, teachers, and administrators from around the world. It promises to be an outstanding gathering.

Sincerely,

Mimi R. Gladstein
Women in Higher Education Conference Board
### Tuesday, January 7

<table>
<thead>
<tr>
<th>Time</th>
<th>Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>8am</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>8:30 - 9:20am</td>
<td>Krystina K. Leganza, Dana Laas, and Heather Hampton</td>
</tr>
<tr>
<td></td>
<td><em>A Women and Mathematics Course</em></td>
</tr>
<tr>
<td></td>
<td>Michael Cunningham, Melanie Ocbrink, Cassie Key, and Debbie Winkler</td>
</tr>
<tr>
<td></td>
<td>14 Steps to Proper Public Relations: The Key to Tech Prep Development</td>
</tr>
<tr>
<td></td>
<td>Changing the Business of Learning in the 21st Century</td>
</tr>
<tr>
<td></td>
<td>Susan M. Miller, Kenneth L. Miller, and Gwen Schroth</td>
</tr>
<tr>
<td></td>
<td><em>Is Higher Education Free From Bias? Perceptions of Graduates</em></td>
</tr>
<tr>
<td></td>
<td>Elaine Rhodes and Betty L. Barhorst</td>
</tr>
<tr>
<td></td>
<td><em><a href="http://www.Women's">http://www.Women's</a> Winning Ways</em></td>
</tr>
<tr>
<td>9:30 - 9:50am</td>
<td>Cynthia Wood</td>
</tr>
<tr>
<td></td>
<td><em>The Role of Women in Creating A Campus Culture Congruent with the Needs</em></td>
</tr>
<tr>
<td></td>
<td>of Work Force 2000</td>
</tr>
<tr>
<td></td>
<td>Consolacion Fajardo</td>
</tr>
<tr>
<td></td>
<td><em>Gender Distribution of Students in Accounting Courses and Its Impact</em></td>
</tr>
<tr>
<td></td>
<td>on Students' Grades</td>
</tr>
<tr>
<td></td>
<td>Michaeline Chance-Reay</td>
</tr>
<tr>
<td></td>
<td><em>Married to Academia: The Role of First Ladies in a University's History</em></td>
</tr>
<tr>
<td></td>
<td>(1863-1996)</td>
</tr>
<tr>
<td></td>
<td>Bonnie L. Saucier</td>
</tr>
<tr>
<td></td>
<td><em>Leadership Qualities of Women Administrators in Higher Education</em></td>
</tr>
<tr>
<td>10:00 - 10:20am</td>
<td>AnnMarie Wolpe</td>
</tr>
<tr>
<td></td>
<td><em>What Future for Women in Higher Education in South Africa?</em></td>
</tr>
<tr>
<td></td>
<td>Dana Laas and Heather Hampton</td>
</tr>
<tr>
<td></td>
<td><em>Gender Inequality in Education and its Effect on Development</em></td>
</tr>
<tr>
<td></td>
<td>Sue O. Shaw</td>
</tr>
<tr>
<td></td>
<td><em>The Role of Women in Rebuilding the Russian Economy</em></td>
</tr>
<tr>
<td></td>
<td>Lourdes Rossi</td>
</tr>
<tr>
<td></td>
<td><em>Women Administrators in Higher Education: Environmental Challenges and Opportunities</em></td>
</tr>
<tr>
<td>10:30 - 10:50am</td>
<td>Cheryl Thompson-Stacy</td>
</tr>
<tr>
<td></td>
<td><em>Proactive Strategies for Overcoming Gender Bias and Lessening Salary Gaps</em> for Female Higher Education Administrators*</td>
</tr>
<tr>
<td></td>
<td>Pat Lust</td>
</tr>
<tr>
<td></td>
<td><em>Mentoring Programs for Women: A Proposed Model</em></td>
</tr>
<tr>
<td>11:00 - 11:20am</td>
<td></td>
</tr>
<tr>
<td>11:30 - 11:50</td>
<td></td>
</tr>
<tr>
<td>12:00pm</td>
<td>Conference Adjourns</td>
</tr>
</tbody>
</table>
February 5, 1997

Dr. Donald R. Whitaker
Department of Mathematical Sciences, Chair
Robert Bell Building 465

Dear Dr. Whitaker:

We would like to express our gratitude for supporting us on our journey to Texas to present our paper “Gender Inequality in Education and Its Effect on Development.” We learned a great deal from the experience. Now we have presented at a professional conference, had our research published, and did a great deal of networking. While in Texas, we were able to partake of the many cultural experiences that Fort Worth has to offer; from museums in the cultural district to the Stockyards.

We also were very privileged to accompany Dr. Krystina Leganza to this conference. She is a woman who has profoundly influenced our lives as a teacher and a friend. It was her course, Math and Gender 388, that was the source for our current research. We started our research as an outreach project for the class. This project led to our presentation at the math undergraduate colloquium. Following this successful presentation, we decided to make our study larger and use the results as our honors thesis. Dr. Leganza asked us to accompany her to Texas to speak for a few minutes during her talk. Because of her interest in our work and her invitation to the conference, we submitted our own paper and the rest, as they say, is history.

Dr. Leganza has given us opportunities that will shape our lives forever. Ball State is fortunate to have such a positive role model in its domain.

Thank you once again for your support in sending us to the Women in Higher Education Conference and aiding in broadening our horizons.

Sincerely,

Dana S. Laas

Heather R. Hampton

cc: Dr. R. Johnstone
    Dr. K. Leganza