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THE USE OF THE SOCRATIC METHOD IN A CONTEMPORARY HIGH SCHOOL CLASSROOM IN DEVELOPING PROBLEM-SOLVING, CRITICAL THINKING, AND DECISION MAKING SKILLS

by
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A Thesis

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Approved by
Dr. Donna W. Jorgénsen

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ABSTRACT

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THE USE OF THE SOCRATIC METHOD IN A CONTEMPORARY HIGH SCHOOL
CLASSROOM IN DEVELOPING PROBLEM-SOLVING, CRITICAL
THINKING, AND DECISION MAKING SKILLS
2003/04
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Master of Science in Teaching

The purpose of this action research was to attempt to use a modified approach to the

Socratic method in a contemporary high school classroom as a means of developing

problem-solving, critical thinking, and decision-making skills in high school students.

The participants in the study were 16 male students and 13 female students from two

sections of an eleventh grade Honors English class at a suburban high school in southern

New Jersey. These students were selected as a population of convenience during the

researcher's Clinical Internship II experience. As a part of regular classroom instruction,

the researcher employed a modified form of the Socratic method, using journal prompts

and a subsequent discussion model. Student responses to these prompts were collected

and analyzed. Classroom use of the method and some implications of gender are

discussed.

ACKNOWLEDGMENTS

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Chapter 1: Introduction

<u>Historical Context</u>

Human exploration of knowledge has always been based on asking questions. Indeed, the foundations of contemporary knowledge are based on thousands of years of seeking answers to questions. In this vein, the ancient Greeks are revered by many for their wisdom. One of the earliest and most famous teachers to have ever lived—Socrates—has a method of questioning named for him.

Although Socrates did not record his lessons, Plato preserved them by writing them down. Historically, Socrates taught the young aristocratic males of Athens in the public squares, refusing any monetary compensation. Known for the perpetual seeking of truth, Socrates would question his students about critical and challenging concepts, requiring that each man explore knowledge. Different from other teachers, Socrates claimed ignorance, explicitly stating that he did not possess all of the answers, but like his students was seeking truth.

The question arises, how does this ancient method of teaching effect contemporary students in developing critical thinking, problem-solving, and decision-making skills? The importance of questioning in the learning process can be assumed foundational; nearly every traditional assessment is some type of question. However, this researcher asserts that some questions are more appropriate than others are. Sellappah, Hussey, Blackmore, and McMurray (1998) show in their study that a group of clinical instructors at the undergraduate level asked low level questions 91.2% of the time and

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high level questions only 4.4% of the time when assessing nursing students during rotations. Further, Sellappah et al. (1998) found that instructor qualifications and experience were not significant indicators of an increase in high level questions, but rather posited that training is required to prepare instructors to ask high level questions.

Harold Bloom explored different levels of learning in his taxonomy of educational objectives (Cruickshank, Bainer Jenkins & Metcalf, 2003). In the cognitive domain of this taxonomy, Bloom classifies levels from lowest to highest as knowledge, comprehension, application, analysis, synthesis, and evaluation. The hierarchy is conceptualized in such a way that a student must begin at the lowest levels, working toward the highest levels. Bloom's structure implies that if a student can exhibit one skill on the hierarchy, the student is also able to exhibit all of the previously listed levels. In this hierarchy, the goal is for students to attain the higher level, as these indicate that learning is maximized and most effective. This researcher contends that participants in the Socratic method often employ the three highest levels—analysis, synthesis, and evaluation.

Clearly, questions are a crucial tool, and the type of question asked is extremely important. Low level questions, described as information, knowledge, comprehension, and application according to Bloom's taxonomy, are important, but it can be argued that these questions should lead to the higher level questions, described as analysis, evaluation, and synthesis according to Bloom's taxonomy. Questions that are Socratic would also fall into the high level, as these questions do not have a single right answer. These questions are abstract rather than concrete, and therefore, perceived to be more challenging to assess. When questions are asked that have only one acceptable answer,

the instructor can quickly assess and assign a grade. This researcher would argue, however, that such assessments are often shallow, measuring regurgitation rather than learning. When an educator only uses literal level assessments, the student is being done a disservice because he or she learns to memorize an unreasonable amount of information that will likely be forgotten once the assessment has passed. The student's mental energy is wasted—rather than learning how to think, the student has been forced to absorb information. Because educators are perpetually limited by time, the perceived quick and easy assessments are often used. Training in the use of Socratic method would likely benefit the instructors and the students as recommended by Sellappah et al. (1998) because with training, the Socratic method is likely to be used with fluidity and relative ease. Perhaps many educators shy away from this method because they see a traditional definition—strictly as a dialogue between a facilitator and a respondent—and feel that such a method cannot work in a classroom of twenty-five or more students.

Given that the world today is vastly different from the world in the time of Socrates, one might question whether or not his teaching methodology should hold a legitimate place in the current educational forum, and whether or not this method is useful to students in the American public school system in contemporary times. It becomes helpful to define what the Socratic method entails for the purpose of this report, as many seem to think that this method relates only to a teacher-student situation in which an instructor is under a tree interacting with one or two students. This definition of the Socratic method is narrow. It seems to have little relevance to the contemporary classroom and situations that students and teachers face daily.

If the Socratic method is strictly defined as a dialogue of questions and answers, then it appears that only two roles exist: the one who questions and the one who answers. The questioner is the facilitator, asking the one who answers to rationalize and explain his or her answers. The second role—that of the respondent—is that of the one who is thinking and answering the questions presented by the facilitator.

A broader and more pragmatic perspective of what the Socratic method can mean gives clarity, allowing for more freedom in interpreting the method. The third role of active listener can be recognized when broadening the above definition. When this third role is included in the design of the Socratic method, the learning community led by the instructor can work toward a scenario in which the role of facilitator, respondent, and active listener are mutable, maximizing student interaction. Ideally, this is what Socratic method might look like in the classroom—interdependent students learning together, asking questions, listening, and answering each other.

In recent academic literature, the phrase Socratic method seems to have become more popular. Many who write about the Socratic method either report how they have used the Socratic method in the classroom or theorize what the Socratic method does for a student. Elder and Paul (1998) assert the importance of questioning in the learning process, and they value Socratic questioning in the developing of critical thinking skills, giving a sample Socratic dialogue for a teacher and his or her biology students. Maiorana (1990) proposes the Means-End Critical Analysis of Subject Matter (MECA*SM) methodology for following the Socratic method as a way of developing critical thinking skills in students. As this is his adaptation of the Socratic method that he believes to be a successful tool in the classroom, it can be concluded that adapting the Socratic method to

fit the needs of the contemporary classroom is possible. More importantly, doing so can allow an educator to create a valuable tool for developing critical thinking skills in students.

Pekarsky (1994) suggests that the effectiveness and ethics of using the Socratic method are contradicted by its purposes in moral and character education because the instructor might deceive a student. One might respond that even this could be a lesson for the student—question everything, taking nothing for granted—which is the heart of the Socratic method. Doing this may change the nature of the student teacher relationship in that more responsibility for learning is placed on the student and less control is in the hands of the teacher as the student must perpetually construct his or her own knowledge. However, this researcher believes that this would be a positive outcome because the onus of learning is placed on the student, and knowledge thus acquired is far more meaningful and memorable for that student.

Statement of Problem

In an increasingly complex world, students need to develop critical thinking, problem-solving, and decision-making skills to be successful in the classroom, on standardized tests, and in adult society. Among educators, trends in methodologies often cycle, as each is a response to those theories or philosophies that came before. One method of teaching and questioning that has existed for thousands of years and has fallen in and out of favor with educators is the Socratic method. Currently, many educators seem to favor the use of authentic assessment and collaborative learning, and many falsely seem to think that these methods are diametrically opposed to the Socratic method. Yet, much of the recent literature theorizes that there is value found in using the

Socratic method to educate students and develop their critical thinking skills. In the time of No Child Left Behind [NCLB] legislation, where there is a heavy emphasis on standardized test scores, the students in the American public school system need to think critically, and being able to think critically will help students perform on standardized tests. This could be further researched by an additional, more comprehensive study. One could argue that standardized tests yield problem-solving and decision-making scores, but too often these yielded scores may be hollow representations of actual student skills. It is uncertain what these scores actually mean for students, but one can argue that using the Socratic method to develop critical thinking, problem-solving, and decision-making skills will have a valuable outcome in assisting students in becoming responsible, thinking, active adults. A likely side effect of this would be higher standardized test scores.

After examining the nature of the Socratic method, one can conclude that presenting students with journal prompts where each student must choose to respond to one of three Socratic questions, discussing and further examining together as a class, fits the Socratic method. Evidence of student change in these elements will be gathered from written responses to given writing prompts.

This researcher believes the Socratic method can be effectively incorporated in a contemporary high school classroom, and that it can be used successfully in conjunction with contemporary trends in education, such as authentic assessment and collaborative learning. Further, this researcher believes that using questioning methods, specifically the Socratic method, will develop the skills students need to be successful academically and also on the pervasive standardized tests and the skills that students need in functioning in

the adult world. Three of these necessary skills are critical thinking, problem-solving, and decision-making. This study will analyze student responses to a form of Socratic method. The method used was not the traditional method of teacher as the verbal questioner with one student responding, but rather the teacher gave all students Socratic questions in the form of journal prompts; the students chose one of three prompts, wrote a response, and then discussed their responses verbally. The written responses will be analyzed.

<u>Research Questions</u>

This researcher believes that high schools should be helping students develop critical thinking, problem-solving, and decision-making skills. These skills are helpful to students who live in a society that has become increasingly convoluted as time has passed. Having these skills will help the students to be successful in the classroom and also to be responsible, active adults.

During the course of this teacher education program, the contemporary high school classroom and the students who bring these classrooms to life challenged the researcher. While being challenged in this practical experience, this researcher wondered if theory and practical use of the Socratic method would benefit students. From the information attained in the literature and internship experience, the researcher became convinced that indeed the Socratic method could be useful in the contemporary classroom. However, recognizing that the world and the classroom are far different places than when Socrates lived, it is expected that the method may need some adjustment to find a place in the contemporary classroom. The method does not necessarily lose

usefulness simply because adjustment is needed. This belief that the Socratic method can be useful brought the researcher to the first research question.

In considering a way in which to adapt the Socratic method, the researcher believed that to most fully benefit students, each student would need to be actively engaged. The use of journal prompts appeared to be a potential avenue for engaging a class of students. Verbal discussion following the students' responses to the prompt allowed an introduction of a more traditional form of the method. Further, this would allow for student interaction and further development of the learning community. These beliefs led the researcher to the second research question. Seeing journal entries followed by discussion as a viable way to incorporate the Socratic method in the normal classroom routine led the researcher to the third research question. This question led the researcher to the next research question, as a change in the nature of answers and the depth of discussion may indicate a change in students' critical thinking, problem-solving, and decision-making skills. In considering the population that participated in the study and the anticipated outcome, the researcher hypothesized that gender may affect student response to the Socratic method, which led to the final research question. Therefore, the final set of research questions is listed as follows.

1. Can journal entries, and subsequent discussion, model and help students to put Socratic method into practice?

2. Will this use of Socratic questioning change the nature of answers and depth of discussion in students?

3. Will this less traditional interpretation of Socratic method aid students in their development of problem-solving, critical thinking, and decision-making skills?

4. How does gender affect student response to the Socratic method?

5. Can the Socratic method be adapted to be a useful tool in the contemporary high school classroom?

<u>Operational Definitions</u>

For the purposes of this study, this researcher has crafted the following definitions.

Critical thinking is defined as the ability to reason, to present an opinion, and to value another's reasoning and opinion.

Decision-making is defined simply as the ability to look at multiple possible options and make a choice.

Learning community is defined as the environment in which students learn. Ideally, this is a positive place for exchanging ideas among individuals and learning.

Metacognition is defined as the student's ability to manipulate, understand, and develop what he or she knows about his or her knowledge and the process by which the student has acquired that knowledge.

New Jersey Reading Open-ended Scoring Rubric is the rubric used to score responses to open-ended questions on a scale from 0 to 4 on the Grade Eight Proficiency Assessment and the High School Proficiency Assessment. For a sample of this Rubric, please see Appendix C. This rubric was also used to score the randomly selected student responses.

Problem-solving is simply defined as the ability to solve problems. The key element of this notion is the ability to approach a problem from many different angles, finding options and possibilities for solving the problem.

Socratic method is not so easily defined as the previous terms, but for the purposes of this research report will be defined simply as an exchange between two or more parties where questions are asked and answers are explored. Often, these

questions are focused on "why" and "how," and no single answer is necessarily the acceptable one.

Chapter 2: Literature Review

How does the Socratic method function in a contemporary high school classroom? Even this question can be seen as an example of the way in which humans have attained knowledge; the foundations of contemporary knowledge are based on thousands of years of seeking answers to questions. Since the world is dramatically different from the world in the time of Socrates, one might question whether his teaching methodology should hold a legitimate place in the current educational forum, and whether this method is useful to students in the American public school system in contemporary times.

This researcher believes that high schools should be helping students develop critical thinking, problem-solving, and decision-making skills. Further, this researcher believes that these skills are helpful to students who live in a highly developed, complex society, and that having these skills will help the students to be successful in the classroom and also to be responsible, active adults.

During the course of this teacher education program, the contemporary high school classroom and the students who invigorate these classrooms fascinated the researcher. While being challenged in this practical experience, this researcher wondered if theory and practical use of the Socratic method would benefit students. This questioning led the researcher to seek knowledge from the relevant literature.

The literature on questioning suggests that questioning is a crucial tool in the classroom. Further, the literature suggests there are many different views on the Socratic

method. From these different views and opinions, one can conclude that the Socratic method is adaptable and can be used in the classroom to meet the needs of students.

In discussing the use of questioning in the classroom, Napell (1978) asserts not only the importance of questions, but also the types of questions that teachers ask and the way in which questions are phrased. She identifies and provides examples from undergraduate classrooms of several confusing, suppressive types of questions, including "Dead-End," "Chameleon," "Programmed Answer," "Put-Down," and "Fuzzy" questions (p. 192). These types of questions are identified as less useful because they do not "provoke thoughts, evoke expression, encourage discussion, initiate arguments, raise further questions, and enable students to ask without embarrassment about what they do not understand" (p. 188). Napell shows that the phrasing of questions is important, as minor changes to the wording of a poor or confusing question can clarify the instructor's intended meaning.

Using Bloom's taxonomy, describing analysis, synthesis, and evaluation as "complex intellectual tasks," Napell (1978) shows how in a lesson, an instructor may ask the students many questions, but often the instructor asks the students only low level questions, delivering answers to the more complex questions rather than allowing the students to answer these questions (p. 193). Further, she asserts that instructors should plan their questions to move from low to high level, according to Bloom's taxonomy. In addition, she suggests that students should be learning to ask their own questions, describing several methods that can be used to develop these skills. She emphasizes the need for teachers to believe that students "are capable, that they can inquire and respond intelligently" (p. 197) and to model the right kinds of questions.

In describing a district-wide initiative in which teachers attempted to develop the thinking skills of their students, Falkoff and Moss (1984) quickly connect thinking and questioning. In the process of developing a curriculum for enhancing student inferential and analogy-making skills, they report one teacher's frustration in eliciting only literal-level responses from her first grade students, exclaiming, "I must have been asking the wrong questions" (p. 5). Citing that "80 to 85 % of all questions asked by teachers are on a factual level," (p. 5) Falkoff and Moss assert that teachers need to develop questioning techniques and to model these for their students, but students may need assistance in developing strategies for answering these types of questions.

In their study investigating the use of questioning strategies by clinical teachers, Sellapah, Hussey, Blackmore, and McMurray (1998) assert "appropriate use of questioning strategies by clinical teachers can facilitate the development of critical thinking skills and decision making ability" (p. 1). Pursuant to this, Sellapah et al. find that clinical instructors asked low level questions 91.2% of the time and high level questions only 4.4% of the time when assessing nursing students during rotations. In this study, low level questions were defined as information, knowledge, comprehension, and application; high level questions were defined as analysis, evaluation, and synthesis according to Bloom's taxonomy. Further, this study revealed that 4.3% of the time when questions were asked, these were questions that were affective, yes or no, rhetorical, multifaceted, probing, or double-barreled. This is significant in that these "other" questions were asked almost as frequently as the high level questions—those that are expected to develop critical thinking skills—those that are the most Socratic in nature.

Much of the literature relating to the usefulness of the Socratic method as a teaching strategy primarily is written from a theoretical or methodological standpoint. There are many educators who hypothesize about the effectiveness of this method, whether in favor or opposed to it. There are also educators [see Maiorana (1990); Engel (1994); Keller (2001); Werderich (2002);] who report in academic journals how they have used the Socratic method effectively in traditional classroom settings.

Newton (1978) connects Dewey's progressivist educational philosophy and Piaget's theory of cognitive development as the basis for the use of higher cognitive questioning. She asserts that higher cognitive questioning is the best means of developing critical thinking in the classroom, describing higher cognitive questioning as including analysis, synthesis, and evaluation. Describing how Dewey's philosophy and Piaget's theory relate to a classical teaching methodology, Newton states that both theories imply that

> [T]he learner is an active being who interacts constantly with his social and physical environment. He, therefore, has a need for problem-solving activities which stimulate his cognitive growth and development. . . [This] has always been a primary function of the school. One important aspect of cognitive growth is the development of critical thinking. (p. 286)

In this way, Newton develops a theoretical basis for higher cognitive questioning, advocating the use of this method in the classroom.

To support the claim that higher cognitive questioning leads to critical thinking, Newton (1978) cites three studies in which students whose instructors emphasized higher cognitive questioning showed significant growth on a post-test. Further convinced by

this, Newton reiterates the necessity for instructors' use of higher cognitive questioning, declaring, "today's educational practitioner, then, should not indoctrinate, but should stimulate, examine and question the learner as he guides the learning process" (p. 290).

In adapting the Socratic method for his classroom, Maoriana (1990) proposed a self-designed methodology that follows principles of the Socratic method for student use of critical analysis of subject matter, suggesting that his methodology would be useful to students across several content areas. In Maoriana's methodology, students can participate in discovery learning by following the steps, and by doing so, students must participate in critical thinking. Maoriana posits that critical thinking skills fall into the categories of understanding, analysis and evaluation, and problem-solving. In examining Maoriana's description of critical thinking skills, one can see how these important skills relate closely to problem-solving and decision-making.

Gonder (1993) posits that the Socratic method of active learning is one that teachers can use to help middle level students who are not classified as gifted or special needs. This works best when the students are actively involved in the acquiring of knowledge. High expectations and intrinsic and extrinsic motivation are integral parts of the Socratic method. In Gonder's suggestion, one can see a redefining of the Socratic method as something in which all students can actively participate, not just students who are classified as gifted.

Tredway (1995) describes the events of a typical Socratic seminar, advocating the use of this method in the contemporary high school classroom because it requires active and cooperative participation on the part of the students. She supports this by stating that students must examine concepts—especially those that are challenging or seem

contradictory—and construct meaning. In this way, the acquisition of knowledge is student directed, and students may address important issues that the instructor did not foresee. Tredway supports this by describing an elementary school Socratic seminar during which students discussed a story about a young person's petty theft, leading the students to discuss complex questions such as "Does one theft as a young person define you as a thief?" and "What is fair punishment? How should it be decided, and by whom?" (p. 28). Elementary students discussing these issues are clearly thinking at the higher levels of Bloom's taxonomy.

Tredway (1995) also addresses how the use of Socratic seminar affects the instructor. She acknowledges that some teachers may initially feel a lack of control and a need for extra effort, but Tredway asserts that the educational payoff is worth the effort required by the participants. One example that she cites is that students who participate in this type of learning will trust their own reasoning, and as a result, perform on tests. An additional outcome is that "the school fulfills its primary purpose, preparing thoughtful citizens for active involvement in a democratic society" (p. 29).

In exploring question driven explanatory reasoning and the related potential uses of computer software, Graesser, Baggett, and Williams (1996) assert the role of verbal and written discourse in the development of logical human thought. Further, Graesser et al. claim that the development of deep reasoning is provoked by questions that begin with "why, how, what if, what if not, and what are the consequences" (p. 19). In addition, they assert the need for students to ask questions as an average student in a classroom asks only 0.17 questions per hour, and most questions asked by students are shallow. Graesser et al. suggest that if teachers were better role models in asking deep reasoning questions,

students would learn to ask deep reasoning questions and student comprehension would improve.

Those who support the theory that the Socratic method is useful to contemporary students emphasize the importance of asking questions and the process by which an individual draws a conclusion. Elder and Paul (1998) clearly assert that questions are an essential part of the learning process and that seeking answers to questions as per the Socratic method develops critical thinking skills in students. In this fairly traditional interpretation of the method, value is shown because students who question the world around them are more likely to recognize potential social problems and issues.

In a letter to the editor responding to an article, Keller (2001) reinforces the importance of student ownership of product, applying the principles of the Socratic method to tutoring college composition students. She describes the use of Socratic questioning in the tutorial—that the tutor does not revise or edit, but rather guides the student, exploring his or her writing so the student maintains ownership as well as a deeper understanding. This idea directly relates to the importance of developing a classroom community as a piece of the Socratic method. One element of creating a classroom community is instilling a student sense of ownership.

Werderich (2002) also describes an interpretation of the principles of the Socratic method in the use of journal letters between students and the teacher as a means of differentiated instruction. The succinct, daily one-on-one dialogue allows the teacher to guide the students individually in their understanding of literature that they are reading. She demonstrates how this can help students to critically analyze what they are reading even if every student is reading a different book.

Marks (2002) discusses her return to an eighth grade classroom after being a teacher educator. In transitioning from teacher educator to teacher, she acknowledges that translating educational theory and strategies to be effective in the classroom can be immensely challenging for a teacher, even one who is well equipped with the appropriate educational theory and strategies. Further, Marks recognizes the importance of planning learning experiences that are student grade level and ability appropriate, echoing Vygotsky's notion of scaffolding.

Those who have successfully used the Socratic method in their classrooms tend to value the process of inquiry and student ownership of their work. Engel (1994) emphasizes the need for her students to build their own knowledge through the process of inquiry in mathematics, practicing Li's (2003) assertion that the Socratic method pertains to the personal acquisition of truth.

Interestingly, Tweed and Lehman (2002, 2003), Gurung (2003), and Li (2003) participate in a Socratic dialogue comparing and contrasting Socratic and Confucian teaching methods. Tweed and Lehman (2002) claim that Socrates' teaching is based in questioning widely held assumptions as a means of seeking truth while Confucius' teaching method pertains to the attaining of essential knowledge. Tweed and Lehman further assert that these types of teaching are most effective for students who are "culturally Western" and "culturally Chinese" (p. 89) respectively, as Western society stresses individualism and Chinese society stresses collaboration.

Gurung (2003) responds to Tweed and Lehman (2002) by asserting that Socratic learning is a critical thinking style of learning. Li (2003) posits that Socratic learning is concerned with the personal acquisition of truth, and criticizes Tweed and Lehman's

understanding of Confucian learning, claiming that their explanation is shallow because as Westerners, they lack understanding of Chinese culture. Tweed and Lehman (2003) respond, stating that cultural differences can affect perceptions of learning, but do not claim that one type of learning is better than another, only that one or the other may be more appropriate given the cultural context of the students.

Both Gurung's (2003) statement that Socratic learning is a critical thinking style of learning and Li's (2003) statement that Socratic learning is concerned with the personal acquisition of truth are true, and both are meaningful to students. From these claims, one could argue that the Socratic method is primarily concerned with developing a thinking process, and in this way, principles of the Socratic method could be used to enhance cooperative learning experiences in the modern classroom. Running-Wolf and Rickard (2003) suggest that one manifestation of this is talking circles, where the students and teacher sit in a circle and share knowledge with each other. Using these circles gives students an additional option for learning in the classroom.

A study completed by House (2003) investigating the relationship between specific teaching strategies and mathematics instruction classroom experiences and motivation in Japanese students of mathematics indicated that variety in instructional methods was most enjoyable for students, increasing intrinsic and extrinsic motivation and achievement. Of particular interest in this study is that the data was analyzed as a whole sample and by gender. Overall, students indicated high levels of enjoyment in the learning of mathematics when practical situations were used to explain and explore the mathematical concepts, and when students worked collaboratively in pairs or small groups on projects. Female students tended to indicate a higher level of enjoyment in

learning mathematics when everyday life examples and small groups were used during instruction.

These examples demonstrate several ways of interpreting the principles of the Socratic method for the twenty-first century to allow best practice in an active learning inquiry based classroom. The literature suggests that although empirical research seems lacking, educators hypothesize that there is value in the Socratic method for developing critical thinking skills (Gurung, 2003) and the self-acquisition of knowledge (Li, 2003). Creating an active learning community where ownership is important benefits students (Gonder, 1993; Engel, 1994), and one way in which this is exemplified is using talking circles (Running-Wolf & Rickard, 2003).

Educators report ways in which they have interpreted the Socratic method to work for the benefit of their students, from the use of responsive journals (Werderich, 2002) to the following of a distinctly defined method of steps (Maoriana, 1990). The literature also asserts that grade level and ability appropriate learning experiences must be selected (Marks, 2002) and that using variety in the classroom is most likely to increase student enjoyment (House, 2003).

The literature supports action research and suggests the active learning community environment in which the Socratic method will be most effective in developing student metacognition, critical thinking, problem-solving, and decision-making skills. From the established literature, one can conclude that the Socratic method can be adapted to be a useful tool in the contemporary high school classroom. One way of doing so could be using journal entries. Subsequent discussion and modeling helps students to put Socratic method into practice. What still must be found is whether this

use of Socratic questioning changes the nature of answers and depth of discussion in students, and if this less traditional interpretation of Socratic method aids students in their development of problem-solving, critical thinking, and decision-making skills.

Chapter 3: Data Collection Methodology

<u>Setting</u>

The study took place in a town within 20 miles of Philadelphia in southern New Jersey. According to the town website, the town covers 9.2 square miles, and it had a population of 19,068 in 2000. Within the town are 3,897 single-family homes; the average value of a single family home is $101,500. The median family income in 2001 was $50,131. The school where the research was conducted is a suburban public high school located in the same town as the university. Approximately 690 students were enrolled in this school for the 2003-2004 school year.

<u>Participants</u>

The participants in this study were the eleventh grade students in two sections of the Honors English III class in a high school in southern New Jersey. The ethnic makeup of the class was predominately Caucasian.

The classes were selected from a population of convenience in this researcher's clinical practice setting during spring 2004. The school uses block scheduling, and the classes met on alternating days. They will be designated as Class A and Class B. Both sections enrolled 17 students each. In Class A, 12 male and 5 female students were enrolled. Of the 17 students enrolled in Class A, 13 students returned slips granting parental permission for inclusion in the study. Of these 13 participants from Class A, 11 were male and 2 were female. In Class B, 6 male and 11 female students were enrolled. Of the 17 students enrolled in section B, 16 returned slips granting parental permission

for inclusion in the study. Of these 16 Class B participants, 5 were male and 11 were female.

Instruments

Five sets of journal prompts were used. The first presented each student with four choices of questions; each of the remaining sets of prompts presented each student with three questions. The first set of prompts presented the students with general questions to familiarize the students with reading and responding to these types of prompts. The four subsequent sets of prompts were all constructed to relate to the material studied in the classroom—namely, these prompts were designed to pique thought processes and concepts relating to key concepts examined while studying William Shakespeare's *Othello*. Further, these prompts were crafted as a normal classroom function to best benefit students and to cause the least amount of potential interruption to normal classroom function. See Appendix B for sample prompts.

Procedures

Before executing any part of this research, the researcher obtained permission from the high school principal and the Institutional Review Board. Further, the researcher distributed permission slips to each student to be signed by a parent or guardian. These slips described the impetus of the research and gave contact information for the researcher and her thesis advisor. For a sample of the permission slip, please see Appendix A.

In cooperation with the researcher's University Supervisor and Clinical Internship II teacher, the researcher planned weekly lessons. As a part of these plans, the researcher designed prompts that would evoke thematic elements of the literature that the students

were studying. On the day when students first responded to the prompts, each student anonymously selected a number and submitted a sheet of paper with his or her name and number for the purposes of identifying the prompts.

The typical procedure was that at the beginning of instruction, the researcher would distribute the prompts to each student face down. When each student had received a prompt, the researcher would gather student attention, and instruct students to turn over the prompts and begin. Students would turn over their papers, number them with the number that they each chose to identify themselves, read the three choices of questions, select an option, and respond on the prompt sheet. After five to seven minutes had elapsed, the researcher would instruct the students to finish the thought that they were currently writing and put their writing implements down.

For the first prompt, the researcher then asked the students to turn their papers over and describe what they had done when the researcher said, "Go." When students had finished responding, the researcher discussed this with the students.

When each student finished writing, the typical procedure was for the researcher to ask the students to raise their hands indicating which prompt they chose. The researcher would then ask for a student to explain why he or she chose a particular prompt. This would often lead students and the researcher to an impromptu Socratic dialogue. When the discussion concluded, the researcher would collect the prompts and transition the class into the oral reading of *Othello*. Students would take parts, reading aloud and moving in the area designated as the stage as they felt appropriate to act out the play. At frequent intervals, the researcher would pause to ask the students questions about the text. These questions intentionally ran the gamut from low level questions, such as the

meaning of a word, to high level questions, such as, why a character might behave in a certain way, or how an audience knows that a character is good or bad. This format would typically continue until the bell rang, modeling a Socratic type dialogue.

After class ended, the researcher would read the students' responses to the prompts and photocopy them. The researcher would return the original prompts to the students at the following class meeting. As the students in Class A were preparing to answer the final set of prompts, one of the students asked the researcher if she was ever going to grade or put any comments on their prompts. Other students expressed similar sentiments. The researcher asked the students in Class A and subsequently Class B to write yes or no on their paper, indicating whether or not they desired comments. The researcher, after collecting these prompts, read them and responded individually to each student by asking further questions. During the next class period, the researcher redistributed the final set of prompts, allowing the students to respond to the researcher's questions. Typical procedure was followed in collecting, reading, photocopying, and returning these prompts.

As a part of the student teaching experience, the researcher wrote reflections on a weekly basis regarding her perceptions as a developing teacher.

Data Analysis

The data was analyzed to seek answers to the research questions, and was analyzed in three ways. First, the number of students responding to each of the prompts per set was analyzed to determine frequency of response to each of the prompts. Second, the data was analyzed as a whole to determine signs or lack of signs of overall student development in problem-solving, critical thinking, and decision-making skills. Non-

random findings deemed important by the researcher were noted. Third, to analyze the data more in-depth, three randomly selected sets of response from students in each class were scored according to the New Jersey Reading Open-ended Scoring Rubric and analyzed to more specifically determine the development in problem-solving, critical thinking, and decision making skills. To be considered for this random sampling, the students were required to have responded to one prompt in each set as well as the researcher's questions on the fifth prompt.

Chapter 4: Findings

Because the data was successfully collected regarding this research, it can be concluded that Socratic method can be used in the form of journal entries, and subsequent discussion, to model and help students put the Socratic method into practice. This data was analyzed to seek additional answers to the research questions. First, the number of students responding to each of the prompts per set was analyzed to determine frequency of response to each of the prompts. Second, the data was analyzed as a whole to discover signs of overall student development in problem-solving, critical thinking, and decision-making skills, and the researcher will address non-random findings deemed noteworthy. Third, the complete data from three randomly selected students from each class was analyzed to more specifically determine the same.

Set 1 question B, set 3 question B, and set 5 question C evoked the highest number of responses from Class A overall at 7 responses each. Set 3 question C evoked the lowest number of responses from Class A overall at 0 responses. Set 4 question C evoked the highest number of responses Class B overall at 10 responses. Set 2 question C and set 4 question A evoked the lowest number of responses from Class B overall at 0 responses each. For further detail regarding the frequency of response to questions by class, please see Figure 1.

Set 5 question C evoked the highest number of responses overall from female students at 8 responses, and set 4 question C evoked the highest number of responses overall from male students at 10. Set 2 question C and set 4 question A evoked the lowest
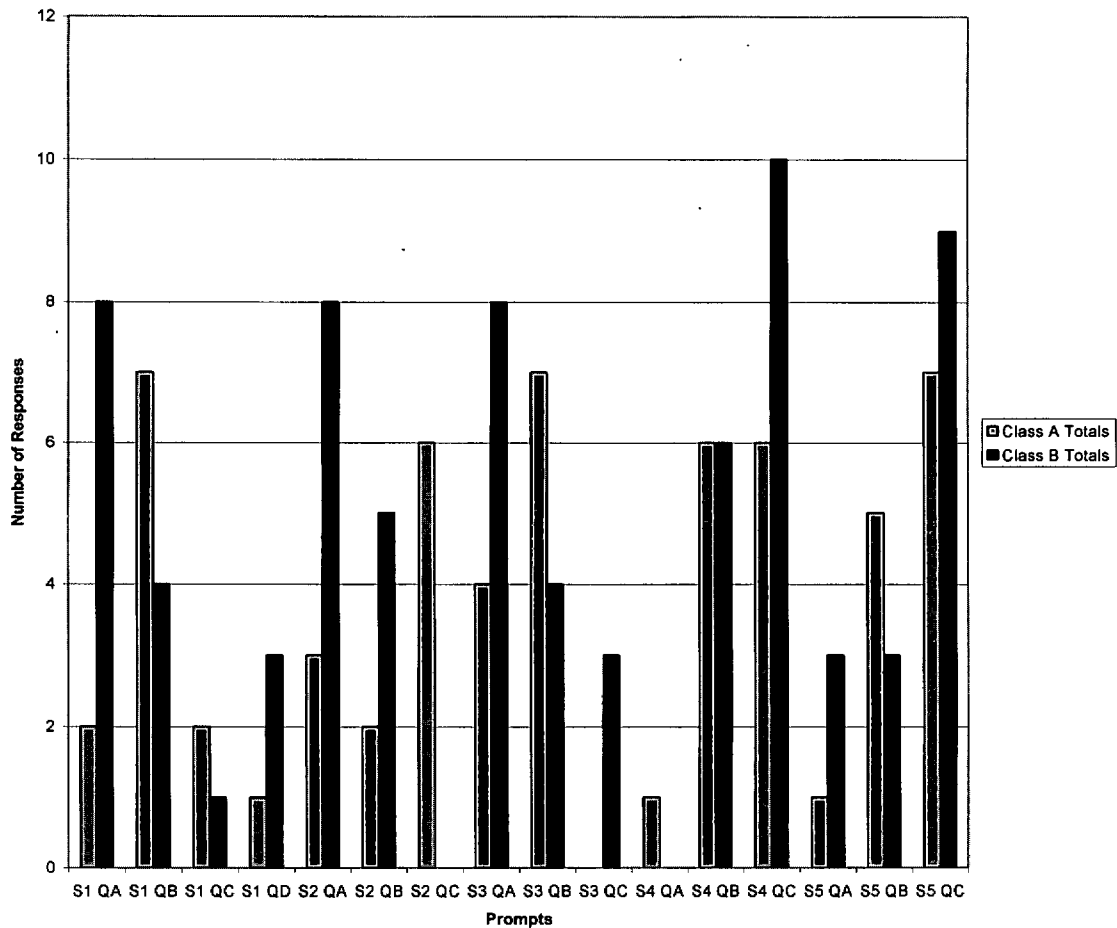
Figure 1. Comparative class total response

number of responses overall from female students at 0 responses each, and set 3 question

C and set 5 question A evoked the lowest number of responses overall from male

students at 0 responses each. These findings indicate that one way in which gender may

affect student response to the Socratic method is that the nature of a Socratic question

may affect the level of response it evokes from students by gender. For further detail

regarding frequency of response to questions by gender, please see Figure 2.

Set 4 question C and set 5 question C evoked the highest number of responses

overall at 16 responses each. Set 4 question A evoked the lowest number of responses

overall at 1 response. For further detail regarding frequency of response to questions
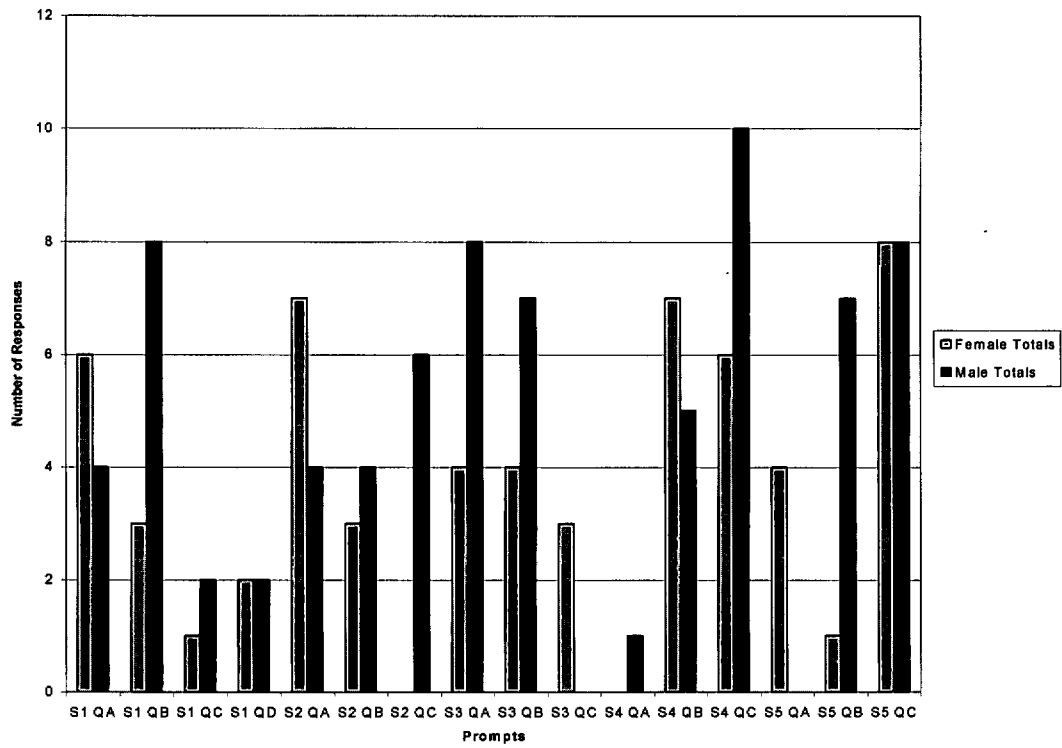
overall, please see Figure 3.

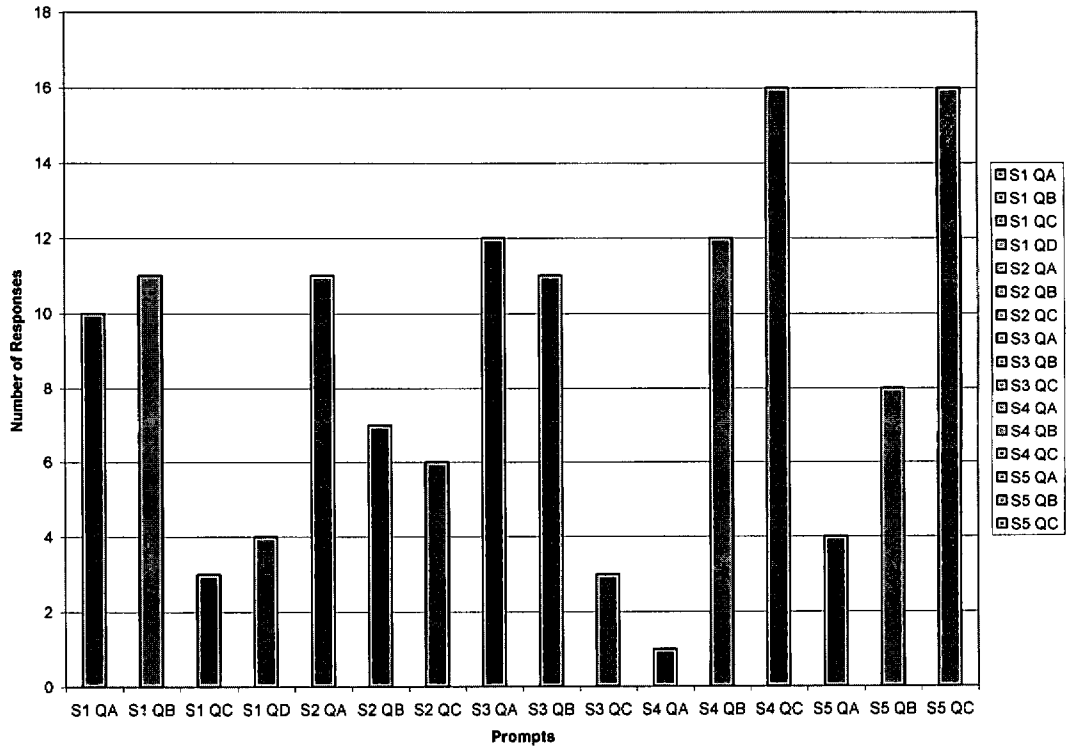*Figure 2.* Comparative total gender response

Figure 3. Grand totals of responses

During the discussion following the first set of prompts, when asked why students chose a particular prompt, students in both classes concluded that they selected a prompt of personal relevance. Also, as the research progressed, students interacted with the researcher. In Class A, when asked to write "yes" or "no" on their paper to indicate their desire for comments, 11 students wrote "yes," 0 students wrote "no," 0 students responded indifferently, and 1 student did not respond. In Class B, when asked to write "yes" or "no" on their paper to indicate their desire for comments, 6 students wrote "yes," 5 students wrote "no," 4 students responded indifferently, and 0 students did not respond. For a graphic representation of student desire for comments by class, please see Figure 4.
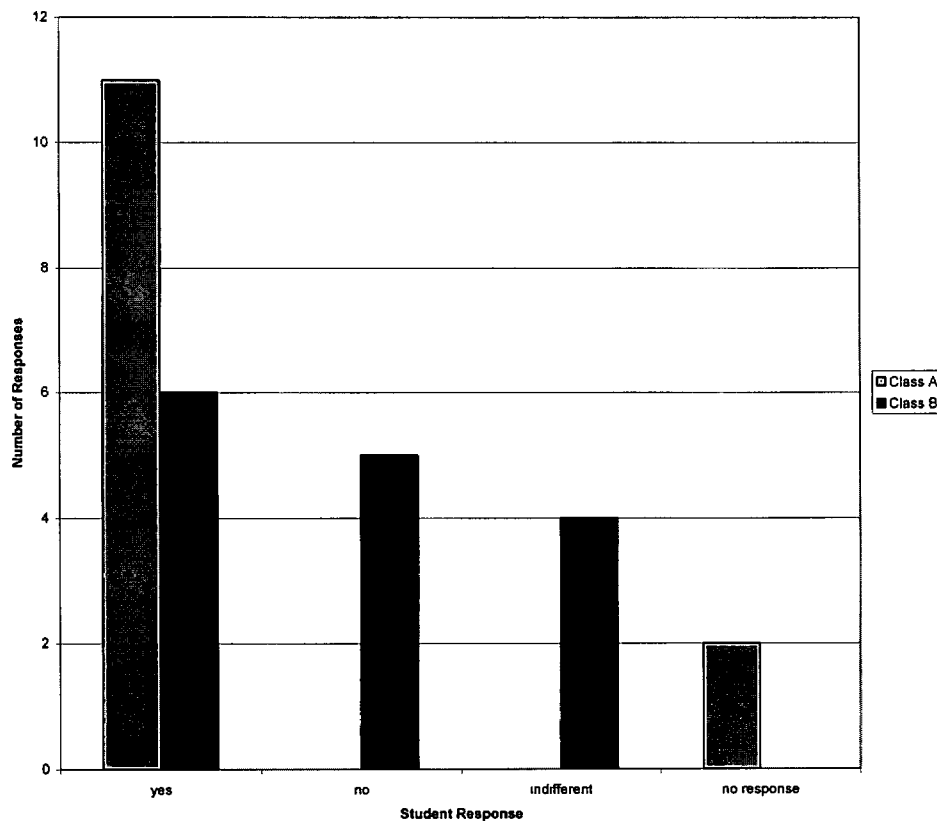

Figure 4. Desire for comments by class

When the prompts were returned with teacher comments and questions, students were asked to respond, and the prompts were recollected. In Class A, 9 students wrote

responses and 4 students did not write responses to the researcher's questions. In Class B,

13 students wrote responses and 2 students did not write responses to the researcher's

questions. For a graphic representation of student response to teacher comments and

questions by class, please see Figure 5.

Figure 5. Student response to comments by class

When asked to write "yes" or "no" on their paper to indicate their desire for

comments, 6 female students wrote "yes," 4 female students wrote "no," 2 female

students responded indifferently, and 1 female student did not respond. When asked to

write "yes" or "no" on their paper to indicate their desire for comments, 11 male students

wrote "yes," 1 male student wrote "no," 2 male students responded indifferently, and 1

male student did not respond. For a graphic representation of student desire for comments

by gender, please see Figure 6.
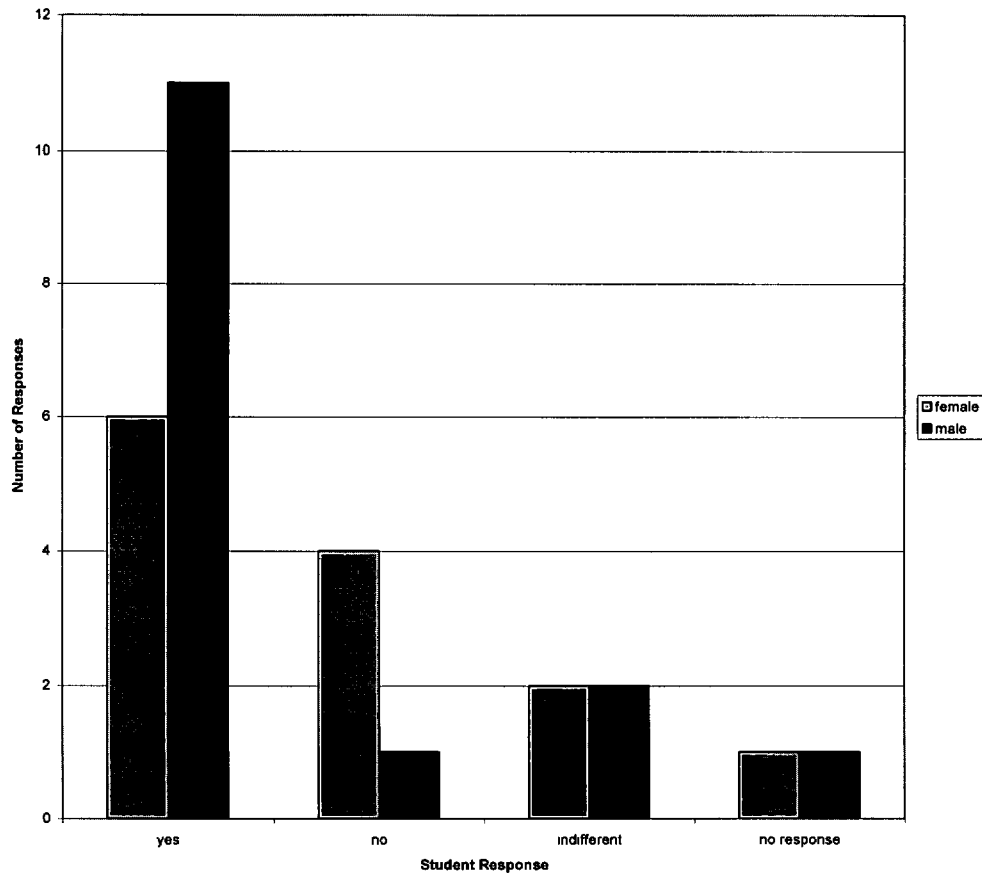
Figure 6. Desire for comments by gender

These responses were returned to the students during the following class; students were asked to respond, and the prompts were recollected. Despite a noteworthy indication that the female students did not greatly desire comments thereby engaging in an individual Socratic dialogue, 12 female students wrote responses and 1 female student did not write a response to the researcher's questions. When these prompts were returned to the students during the following class, students were asked to respond, and the prompts were recollected, 10 male students wrote responses and 5 male students did not write responses to the researcher's questions. While 73.3% of male students wrote "yes" for teacher comments, 66.7% of male students responded to these comments. Of female students, 46.2% wrote "yes" for teacher students, and 92.3% of female students

responded to these comments. This finding may indicate that female students are more likely to respond to comments, although it cannot be determined what causes a higher level of response in female students. However, these findings also indicate that based on gender, students may respond differently to the Socratic method. For a graphic representation of student response to teacher comments and questions by gender, please see Figure 7.
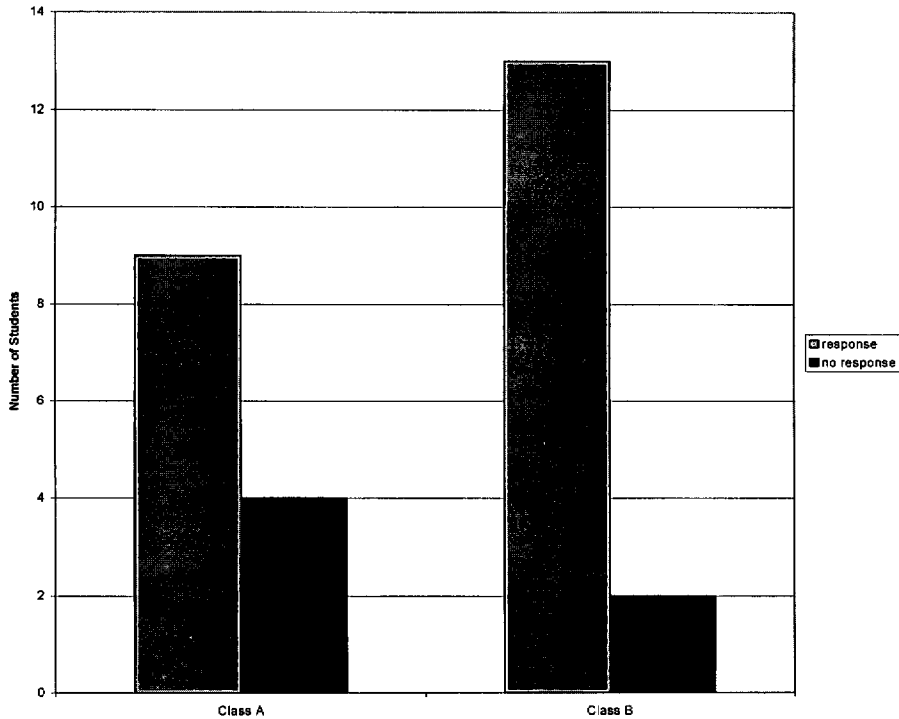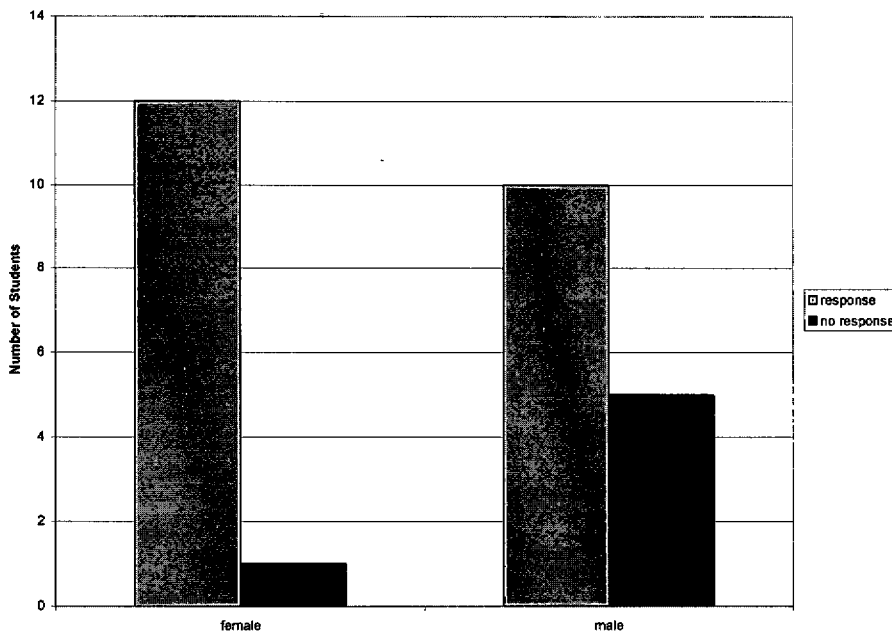

Figure 7. Student response to comments by gender

While this research was not designed initially to determine gender differences in response to the Socratic method, these issues presented themselves. However, this research does not seek to definitively conclude the gender differences in response to the Socratic method, nor does it seek to conclude the cause of such differences, whether they are biological or sociological. Rather, the findings show that the male and female students in this study responded differently to prompts, and that certain prompts evoked a higher response from males and certain prompts evoked a higher response from females.

This is noteworthy as the Socratic method as used by Socrates included only verbal discourse between wealthy Athenian males, but this research used a coeducational Honors English class in a suburban New Jersey high school.

In an overall analysis of the data, several noteworthy items were found. One such noteworthy finding was ten instances of students asking questions in their responses over the course of the five sets of prompts. This is an indication that the Socratic method was happening in the class, as asking questions is the integral piece to the method. While most of the questions were not necessarily Socratic in nature, this can be seen as an indication of student internalization of the method.

One interesting finding regarding gender was that no male students selected set 5 question A (Imagine that you have inadvertently done something that upset one of your friends. How would you handle the situation?), yet 4 female students selected this question. This may indicate that male and female students respond to friendship and changes in friendship differently.

An additional noteworthy finding that seemed to indicate a gender difference in response was the way in which male students and female students responded to set 1 question B (Describe the perfect teacher.) None of the 3 female students who responded to this question commented on physical characteristics, yet 6 of the 8 male students who chose this question mentioned physical characteristics, and most of them in detail. Further, the female students did not indicate that gender was a factor for the perfect teacher, but 6 of the 8 male students did. However, in set 2, these male students responded more appropriately to the questions that were presented to them. This change in response may indicate that while these students initially responded in a way that

displayed their male heterosexuality, on the subsequent sets of prompts, they took the Socratic method design more seriously.

Student 0003 was a male from Class A who used physical characteristics to describe the perfect teacher. His responses to subsequent prompts were unusual in that most of the students took the prompts more seriously, whereas this student often wrote sarcastic responses. This fit the nature of the student's behavior in class; however, the researcher does not contend that a sarcastic attitude is diametrically opposed to participation in the Socratic method. Rather, in the case of this student, sarcasm was the way in which this student expressed his cynicism. While this young man was clearly smart, he did not perform up to his potential. It can be concluded that this student was not investing in the Socratic method. Perhaps if the methodology were used over a longer duration, these findings would be different, and his cynicism and unwillingness to accept conventional notions may have aided his willingness to invest in the Socratic method.

Student 0101 was a male from Class A who used physical characteristics to describe the perfect teacher. At the bottom of this prompt, he wrote "(Dont [*sic*] take offense, please!) I dont wanna get in trouble." On subsequent prompts, this student responded more appropriately, and seemed to take the prompts more seriously. Interestingly, on set 5, this student chose to answer question C (Why do people consider items passed down through a family important?) When the researcher asked further questions regarding his response, this student wrote, "Because it was my grandmom's. And I love my grandmom. (Dont ask me why I love her, I am not getting into this never ending cycle of "why?" and I try to answer.) [*sic*]." This comment is noteworthy because it indicates that Student 0101 understands that there are always questions that can be

asked, but he was not willing to engage in Socratic questioning at that time.

The researcher attempted to engage the students in a Socratic dialogue after each set of prompts, and usually the students would engage in discussing at least one of the prompts in depth. However, one prompt in particular—set 4 question B—evoked interesting responses both in writing and in verbal discussion. In total, 12 students responded to this prompt—7 female and 5 male—regarding whether love or reason is more important and why. All 7 female students who responded to this prompt chose love as more important; 2 male students stated that love is more important, 1 male student stated that reason is more important, and 2 male students stated that love and reason are both important. Further, in Class A, the predominately male class, a student raised the issue of false dichotomy, and a Socratic discussion among the class regarding this issue ensued. Although this is one example from several discussions that ensued over the course of the research as a result of the prompts, based on this finding, it can be concluded that using Socratic questioning can change the nature of answers and depth of discussion in students.

Student 0311 was a male from Class A. He responded to each question demonstrating a level of insight. On set 5, he chose to respond to question C (Why do people consider items passed down through a family important?) He concluded the these items are likely to have value, specifically monetary value, because they are often old, and he wrote "yes" for comments. The researcher responded, in similar manner to the way she responded to all of the students, attempting to present the students with several ways to answer. To this student she responded, "What kind of value can an item have? Monetary? Other? How does an item have value? How do you know that it's valuable?"

In his response, he wrote, "You ask a lot of questions I'd rather comment on what you think rather than ask me a whole bunch of questions! [*sic*]."

Student 0420 was a male from Class B who responded to each of the sets with a level of good-natured sarcasm. He was also a bright student. On set 5, he chose to respond to question B (What are some things that could cause a person to be "out of his mind"?) His response began, "What could make someone go out of their mind? Maybe having to do writing prompts all the time or maybe having Honors English III every other day. Maybe having to work on Friday from 4-9 or studying for a test and then failing . . . Life in general can make you go crazy, but if you don't worry about it, it's not as bad." Although this student seemed to find the questions frustrating at times, from this process, he articulated what seemed to be his philosophy on human existence.

The final non-random finding is noteworthy because it may indicate the students' level of comfort with the Socratic method. After the students completed set 5, the researcher wrote further questions, and the students responded to those questions, the researcher examined these final responses and found that these were often the shortest comments that students wrote throughout the course of this study. This seems to indicate that the students were still adjusting to the Socratic method at the end of the study.

To execute a more detailed analysis, three random samples from each class were selected. To be selected, these prompts were required to be complete in that the students had to respond to one prompt in each set and to the researcher's questions on the final prompt. Of the samples from Class A, 0 were from female students and 3 were from male students. Of the samples from Class B, 3 were from female students and 0 were from male students. This random selection reflects the fact that Class A was predominantly

male and Class B was predominantly female.

When analyzing these responses, the researcher considered the length and style of the writing, especially use of sentence structure, as these elements seemed to indicate higher thought, higher quality of insight, higher ability to make connections, and overall more thought provoking and interesting responses. To quantify this data and to use established parameters to determine the quality of student responses, the researcher scored the prompts according to the New Jersey Reading Open-ended Scoring Rubric, which is a scale from 0 to 4. This rubric is used to assess open-ended responses to questions from narrative and persuasive reading passages on the Grade Eight Proficiency Assessment and the High School Proficiency Assessment. The researcher chose this rubric because it shares elements with the way she sought for the students to respond to the questions.

According to this rubric, a score of "0" indicates a response that is "irrelevant or off-topic." A score of "1" indicates a response that "demonstrates minimal understanding of the task, does not complete the requirements, and provides only a vague reference to or no use of the text." A score of "2" indicates a response that "may address all of the requirements, but demonstrates a partial understanding of the task, and uses the text incorrectly or with limited success resulting in an inconsistent or flawed explanation." A score of "3" indicates a response that "demonstrates an understanding of the task, completes all requirements, and provides some explanation/opinion using situations or ideas from the text as support." A score of "4" indicates a response that "clearly demonstrates understanding of the task, completes all requirements, and provides an insightful explanation/opinion that links or extends aspects of the text." The researcher

scored the prompts according to the category that best fit the quality of the response. For a sample of this rubric, please see Appendix C.

Student 0008 from Class A was a male who earned an 86% in Honors English III. From set 1, he chose to answer question D (Are you more like a gourmet meal, a home-cooked dinner, or a sack of fast food? Explain.) and wrote five sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. When instructed to turn his paper over and describe what he did to answer the prompt, he wrote two sentences. From set 2, he chose to answer question B (How can a person prove their loyalty to a significant other who is doubting them?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 2. From set 3, he chose to answer question A (Pick a character. Is he/she a "good" or "bad" character? Why?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 4, he chose to answer question C (Are good manners important? Why?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 2. From set 5, he chose to answer question C (Why do people consider items passed down through a family important?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. He wrote "yes" for comments and wrote one sentence in response. In responding to these prompts, the length of Student 0008's responses did not increase, but decreased. When responding to each of these prompts, Student 0008 wrote an average of 4.2 sentences in response. This student's average score for responses was 2.6. This average score indicates that on

average, this student formed an explanation with an example and answered the chosen question, but was not always clear and effective in responding.

Student 0054 from Class A was a male who earned an 86% in Honors English III. From set 1, he chose to answer question B (Describe the perfect teacher.) and wrote eight sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 2. When instructed to turn his paper over and describe what he did to answer the prompt, he wrote three sentences. From set 2, he chose to answer question B (How can a person prove their loyalty to a significant other who is doubting them?) and wrote five sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 3, he chose to answer question B (From what you know so far, would it matter whether a Caucasian person rather than an African person played Othello? Why?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 4, he chose to answer question B (Which is more important, love or reason? Why?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 2. From set 5, he chose to answer question B (What are some things that could cause a person to be "out of his mind"?) and wrote two sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. He wrote "yes" for comments and wrote two sentences in response. In responding to these prompts, the length of Student 0054's responses did not increase, but decreased. When responding to each of these prompts, Student 0054 wrote an average of 4.6 sentences in response. This student's average score for responses was 2.6. This average score indicates that on

average, this student formed an explanation with an example and answered the chosen question, but was not always clear and effective in responding.

Student 3264 from Class A was a male who earned a 90% in Honors English III. From set 1, he chose to answer question C (Describe three methods you use to solve problems in your life.) and wrote eight sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. When instructed to turn his paper over and describe what he did to answer the prompt, he wrote four sentences. One of these sentences was the question, "What solution was successful in solving my problem?" From set 2, he chose to answer question B (How can a person prove their loyalty to a significant other who is doubting them?) and wrote eight sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 4. From set 3, he chose to answer question A (Pick a character. Is he/she a "good" or "bad" character? Why?) and wrote seven sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 4, he chose to answer question B (Which is more important, love or reason? Why?) and wrote ten sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 4. From set 5, he chose to answer question B (What are some things that could cause a person to be "out of his mind"?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. He wrote "yes" for comments and wrote five sentences in response. In responding to these prompts, the length of Student 3264's responses did not increase overall. When responding to each of these prompts, Student 3264 wrote an average of 7.4 sentences in response. This

student's average score for responses was 3.4. This average score indicates that on average, this student formed a clear explanation, often using a clear example in answering the chosen question, and sometimes was able to give insightful explanation.

Student 0002 from Class B was a female who earned a 93% in Honors English III. From set 1, she chose to answer question A ("That's not fair!" is a common expression for some young people. Do you think life is fair? Explain.) and wrote six sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. When instructed to turn her paper over and describe what she did to answer the prompt, she wrote three sentences. From set 2, she chose to answer question A (Is a person more likely to believe his/her significant other or friend about whether or not the significant other is loyal or disloyal? Why?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 3, she chose to answer question A (Pick a character. Is he/she a "good" or "bad" character? Why?) and wrote two sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 2. From set 4, she chose to answer question C (Are good manners important? Why?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 5, she chose to answer question C (Why do people consider items passed down through a family important?) and wrote three sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. She wrote "no" for comments and wrote two sentences in response. In responding to these prompts, the length of Student 0002's responses did not increase overall. When responding to each of these prompts, Student

0002 wrote an average of 3.8 sentences in response. This student's average score for responses was 2.8. This average score indicates that on average, this student formed a reasonable explanation with an example and answered the chosen question, but sometimes was not completely clear and effective in responding.

Student 0112 from Class B was a female who earned a 90% in Honors English III. From set 1, she chose to answer question A ("That's not fair!" is a common expression for some young people. Do you think life is fair? Explain.) and wrote five sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. When instructed to turn her paper over and describe what she did to answer the prompt, she numerically listed four steps in sentence fragments. From set 2, she chose to answer question A (Is a person more likely to believe his/her significant other or friend about whether or not the significant other is loyal or disloyal? Why?) and wrote seven sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 3, she chose to answer question A (Pick a character. Is he/she a "good" or "bad" character? Why?) and wrote three sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 2. From set 4, she chose to answer question C (Are good manners important? Why?) and wrote four sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 5, she chose to answer question C (Why do people consider items passed down through a family important?) and wrote six sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. She wrote "no" for comments and wrote two sentences in response. In responding to these prompts, the length of

Student 0112's responses did not increase overall. When responding to each of these prompts, Student 0112 wrote an average of 5 sentences in response. This student's average score for responses was 2.8. This average score indicates that on average, this student formed a reasonable explanation with an example and answered the chosen question, but sometimes was not completely clear and effective in responding.

Student 0826 from Class B was a female who earned a 97% in Honors English III. From set 1, she chose to answer question B (Describe the perfect teacher.) and wrote eight sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 4. When instructed to turn her paper over and describe what she did to answer the prompt, she wrote six sentences. From set 2, she chose to answer question A (Is a person more likely to believe his/her significant other or friend about whether or not the significant other is loyal or disloyal? Why?) and wrote seven sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 3. From set 3, she chose to answer question A (Pick a character. Is he/she a "good" or "bad" character? Why?) and wrote eight sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 4. From set 4, she chose to answer question C (Are good manners important? Why?) and wrote seven sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 4. From set 5, she chose to answer question C (Why do people consider items passed down through a family important?) and wrote seven sentences. The researcher scored this response according to the New Jersey Reading Open-ended Scoring Rubric as a 4. She wrote "no" for comments and wrote one sentence in response. In responding to these prompts, the length

of Student 0826's responses did not increase overall. When responding to each of these prompts, Student 0826 wrote an average of 7.4 sentences in response. This student's average score for responses was 3.8. This average score indicates that on average, this student formed a clear explanation, often using a clear and insightful example in answering the chosen question, and often was able to give insightful explanation.

Regardless of whether students responded in the affirmative or negative for comments, the researcher responded to the student response because she wanted to encourage a one-on-one dialogue if possible. Also, she wanted to determine what response she would receive from students. For students who wrote "no," she asked "Why not?" in addition to asking other questions relating to student response to the prompts. Although this may seem intrusive, the researcher believed that it was a justifiable and reasonable way to attempt to engage the students in Socratic dialogue.

Interestingly, all three samples from Class A wrote "yes" for comments, and all three samples from Class B wrote "no" for comments. Because the students who wrote "no" responded with answers that were factually correct, brief, yet bordering on trite, this may indicate that the students were not interested in engaging further into the concepts being discussed, but did not want to be penalized academically for not responding. This could be so for many reasons. Two possible reasons could be that these students were not engaged in that particular topic and felt that there was nothing further to say, indicating a need for further practice with the Socratic method, or that these students did not need the teacher's endorsement of their ideas and were satisfied with the concepts as they understood them. This may be an indication that male and female students respond to the Socratic method differently.

Based on the six samples and their related findings, it can be concluded that the less traditional interpretation of the Socratic method can aid students in their development of problem-solving, critical thinking, and decision-making skills, even if empirical evidence was not found in this study. It can be concluded, however, that the Socratic method can be adapted to be a useful tool in the contemporary high school classroom. This concept will be further discussed and explored in Chapter 5.

Chapter 5: Discussion

The findings of the previous chapter indicate many things; most importantly, they indicate answers to the research questions of this study. First, these findings indicate an affirmative answer to research question 1, "Can journal entries, and subsequent discussion, model and help students to put Socratic method into practice?" because the researcher was able to collect responses to prompts that indicate that this method was used in the classroom.

Two important factors for the success of this method in the classroom are the importance of student choice in asking questions and the need for fresh prompts. Some questions are more appropriate than others are, and some evoke a higher response from students. Because the students verbally indicated early in the process that they were most likely to choose questions of personal relevance, the better the instructor knows and understands the students, the more capable he or she will be when presenting the students with questions. The instructor who knows the students' interests, academic strengths and weaknesses, thought processes, frustration levels, and willingness to explore concepts, the more able he or she will be to use this method. Presenting the students with choice in answering questions expands the instructor's ability to ask thought-provoking questions to all students in the classroom. Further, if the instructor is aware of these factors, he or she can craft or choose from a predetermined list what questions are most suitable for a particular class on a particular day. Also, it is unlikely that the instructor will always be able to determine the type and intensity of response that will be evoked from a class of

students from a particular question; indeed the same question may evoke a higher and more intense response in one classroom situation than another.

In addition, this researcher believes that these questions will be most effective for the students when they are directly related to the content of the class. If questions presented to the students are presented only to ask questions rather than explore important concepts related to the content of the class, these questions will not have the same effect on the students' discovery and acquisition of knowledge.

The findings indicate an affirmative answer to research question 2, "Will this use of Socratic questioning change the nature of answers and depth of discussion in students?" specifically because of the discussion that ensued following the question relating to the importance of love and reason. As seemed to happen frequently during a Socratic dialogue, the class together took a journey of exploration, examined spontaneous concepts and ideas, and at the conclusion came round in a circle and related these pieces to each other and the content. While these types of discussion seemed to focus on the instructor and one student which is very traditionally Socratic, often, another student or students would interject an idea or a comment that would assist in focusing the discussion. In this way, the dialogue involved more than two—it involved the class. Even students who did not speak were engaged in the discussion.

The findings indicate an affirmative answer to research question 3, "Will this less traditional interpretation of Socratic method aid students in their development of problem-solving, critical thinking, and decision-making skills?" even though this researcher could not show measurable growth over the course of a few weeks. As this researcher believes that questions themselves are a form of problems, answering Socratic

questions can be interpreted as practicing problem-solving skills. This method requires students to practice problem-solving, critical thinking, and decision-making skills each time it is used, and this researcher believes that given more time, measurable and quantifiable aspects could be shown. Further, because this method is one with which students are unfamiliar and often initially uncomfortable, an undetermined amount of time is needed to maximize the potential for overcoming these challenges. Students often expect teachers to possess and dispense the answers to questions—especially truly challenging questions. Changing from this framework to one in which the student must construct and defend the answers to challenging questions can be uncomfortable, but this does not negate the value of this method. Rather, this researcher asserts that this demonstrates the value of the method because it truly challenges the student, placing him or her in a situation where he or she can experience maximum growth and change. Because this method can academically stimulate a student in such an intense way, it is ideal that the instructor knows and understands the students as well as possible so he or she may push their limits but not cause unnecessary frustration.

The findings indicate an answer to research question 4, "How does gender affect student response to the Socratic method?" First, male and female students often responded differently to the questions presented. This is a further reason for presenting students with multiple questions to choose, as gender did seem to affect students' choices in responding to questions to some extent. Verbally, the male students seemed to engage more intensely and more often in the dialogue and seemed more likely to disagree and discuss ideas. Males were more likely to express frustration in the questions; females were more likely to answer questions in what seemed like an obligatory response.

Interestingly, the responses that the researcher considered noteworthy were all from male students. Clearly, the evidence suggests that male and female students respond to questions differently, but this area may need further exploration.

The findings indicate an affirmative answer to research question 5, "Can the Socratic method be adapted to be a useful tool in the contemporary high school classroom?" because the researcher found it to be useful in the classroom. The dynamic of the classroom changes when the instructor is no longer the deliverer of knowledge, but rather, the facilitator of seeking knowledge. Students must take an active role, and all students can be engaged in a Socratic dialogue. While this method is not the panacea for educational challenges, it can be used, and it can aid students in their growth and development as students and as human beings.

The Socratic method can be effectively incorporated in a contemporary high school classroom. This can be done in order to develop the appropriate thought processes students need to fulfill the requirements not only of the traditional classroom but also the pervasive standardized tests, and further, prepare students to live in an increasingly complex world. Using principles of the Socratic method enables the student to develop critical thinking, problem-solving, and decision-making skills. Using the Socratic method changes the attitude that memorizing information makes an individual smart. Therefore, the Socratic method potentially affects assessment in that the teacher must change his or her perspective on interpreting student data. Further, the Socratic method potentially affects students in a way that the data that they give to a teacher is of a different nature, often closer to the upper end of Bloom's taxonomy. For both the student data given and the teacher data, emphasis is not placed on the rote memorization of information, but on

self-actualization and the personal acquisition of knowledge.

Limitations of the study

The greatest limitation that any instructor faces is often the same limitation as the one that this researcher faced in executing this research—time. Time was a limitation primarily because of the parameters of the student teaching experience and the use of block scheduling also impacted the ability to practice the method. Further, the researcher, as a novice teacher executing the research in another teacher's classroom with another teacher's students, experienced a different situation than she would have if this research were conducted over the course of a school year with a class of students that she had taught entirely.

Recommendations

A more comprehensive study of the Socratic method could be conducted, replicating this research over the course of a school year. As this research was conducted with Honors level courses, it would be of interest to conduct this research with College Prep and Basic Skills level courses to see what manifestation of the Socratic method is useful in such classes. Further, because this evidence suggested that male and female students respond to questions differently, it would be of interest to further explore this area. A final recommendation would be compare standardized test scores of students who participate in Socratic method with those who do not.

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Appendix A

Permission Slip

Dear Parent/Guardian:

I am a graduate student in the Secondary Education Department at Rowan University. I will be conducting a research project under the supervision of Dr. Donna W. Jorgensen as part of my master's thesis concerning the development of student critical thinking, problem-solving, and decision-making skills. I am requesting permission for your child to participate in this research. The goal of the study is to determine how to guide students and prepare them for becoming functioning adults.

All information that will be used for this research will be taken from everyday classroom activities. Students will respond to journal prompts as part of their regular class work, and I will record classroom events in a journal, also. Students who participate in the study will be given a number, which is the only way each student will be identified in the research report. In this way, student confidentiality will be maintained. I will retain copies of student journals that are identified only by number; students will keep the original copies of the journal entries.

Your decision whether or not to allow your child to participate in this study will have absolutely no effect on your child's standing in his/her class. If you have any questions or concerns please contact me at xxx-xxx-xxxx or you may contact Dr. Donna W. Jorgensen at xxx-xxx-xxxx ext. xxxx. Thank you.

Sincerely,

Anna S. Muessig

Please indicate whether or not you wish to have your child participate in this study by checking the appropriate statement below and returning this letter to your child's teacher by Friday, April 16.

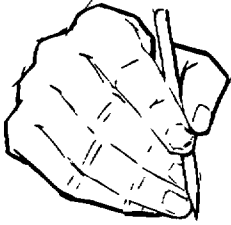___ I grant permission for my child _____ to participate in this study.

___ I do not grant permission for my child _____ to participate in this study.

_____   _____
(Parent/Guardian signature)   (Date)

Appendix B

Writing Prompt Sets

Choose one of the following prompts and respond to it.
You are limited to the amount of space on this sheet of paper.

A. "That's not fair!" Is a common expression for some young people. Do you think life is fair? Explain.
B. Describe the perfect teacher.
C. Describe three methods you use to try to solve problems in your life.
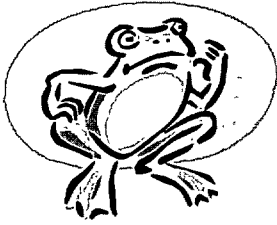D. Are you more like a gourmet meal, a home-cooked dinner, or a sack of fast food? Explain.

Choose one of the following prompts and respond to it.
You are limited to the amount of space on this sheet of paper.

A. Is a person more likely to believe his/her significant other or friend about whether or not the significant other is loyal or disloyal? Why?
B. How can a person prove their loyalty to a significant other who is doubting them?
C. Pick a character and explain why you think the way he/she speaks the way he/she speaks.

Choose one of the following prompts and respond to it.
You are limited to the amount of space on this sheet of paper.

A. Pick a character. Is he/she a "good" or "bad" character? Why?
B. From what you know so far, would it matter whether a Caucasian person rather than an African person played Othello? Why?
C. Is the relationship between Othello and Desdemona believable? Why?

Choose one of the following prompts and respond to it.
You are limited to the amount of space on this sheet of paper.

A.

A. What character do you connect to? Why?
B. Which is more important, love or reason? Why?
C. Are good manners important? Why?

Choose one of the prompts and write a response.
You are limited to the amount of space on this paper.

A. Imagine that you have inadvertently done something that upset one of your close friends. How would you handle the situation?
B. What are some things that could cause a person to be "out of his mind"?
C. Why do people consider items passed down through a family important?

Appendix C

NJ Reading Open-ended Scoring Rubric

New Jersey Reading Open-ended Scoring Rubric

Points	Criteria
4	A 4-point response clearly demonstrates understanding of the task, completes all requirements, and provides an insightful explanation/opinion that links to or extends aspects of the text.
3	A 3-point response demonstrates an understanding of the task, completes all requirements, and provides some explanation/opinion using situations or ideas from the text as support.
2	A 2-point response may address all of the requirements, but demonstrates a partial understanding of the task, and uses text incorrectly or with limited success resulting in an inconsistent or flawed explanation.
1	A 1-point response demonstrates minimal understanding of the task, does not complete the requirements, and provides only a vague reference to or no use of the text.
0	A 0-point response is irrelevant or off-topic.