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Stand By Me

By Robert Lamons

In 1992 a clarion bell was sounded and its reverberations would penetrate all aspects of every school system. How Schools Shortchange Girls, by the American Association of University Women (AAUW), started a wave of introspection in how we educate our young women. The publication pointed out a glaring discrepancy in the apportionment and use of technology and computers for instruction of females.

Shortcomings were also noted in the differential treatment of females through technology instruction in schools (Cushner et al., 1992). This study is an attempt to address one aspect of that report, namely the lack of comfort and confidence in many female students feel when using technology. While this lack of comfort is by no means limited to girls, it is predominately a female symptom from gender-based, cultural expectations.

Bob Lamons, a Geosystems teacher from Annandale High School in Fairfax County, conducted a teacher research study to identify teacher behaviors that promote comfort and feelings of mastery while female students worked with computers. The behaviors that were identified came from data collected from students in five science course sections that use a high level of technology. Through a series of surveys, interviews and personal journals, female students identified teacher behaviors they found to be helpful when working through computer problems. Those teacher behaviors were implemented into regular class sessions and follow up interviews were performed to evaluate the impact of these behaviors on female students.

Introduction

In a lesson on evaluating the pattern of solar flares, my students were given a listing of the number of recorded solar flares for the years 1750 to the present. The data was to be plotted in a spreadsheet and graphs were to be made from the student entries. Before the students began to enter the data, I orally instructed them in how the program could do most of the graphing work for them through a feature called "autofill", then provided them with detailed, written instructions.

As I circulated around the room, checking on student progress, I noticed most girls chose to type in each and every number while the boys had figured out how to get the autofill feature to do the work for them. When I saw this I wondered, "Why were the girls less willing to work through the new method of entering data?" My next thoughts were, "What teacher attitude or behavior would encourage the girls to attempt to use the newer method of data entry?"

My primary goal for my research project was to determine possible teacher behaviors that are conducive to encouraging female confidence and comfort levels in computer related assignments. Hypothetically, if girls can move through

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exercises more comfortably and quickly, learning will increase as will self-image and feelings of mastery. This will lead to a greater sense of competency with technology. This sense of competence will encourage female students to explore and troubleshoot their own work, thereby enabling them to satisfy their own technology needs.

I wanted to investigate, "What teacher behaviors improve the comfort levels and confidence levels of female science students involved in the daily use of technology?"

Research Setting

Annandale High School (AHS) is located in Fairfax County, a Virginia suburb of Washington D.C. Built in 1953, Annandale High School is now a model of diversity with 2,200 pupils representing students from 72 countries, speaking over 52 different languages.

The 140 boys and girls who were the subjects in my research project were eleventh and twelfth grade students enrolled in a semi-elective, college prep science course named Geosystems. Classes met on an alternating day schedule for ninety minutes each period. Every class worked on the computers each class session.

Research Design

The students were given a survey to determine their personal level of perceived proficiency and comfort in working with technology (Appendix 1). The seventy-five female responses were separated into two groups of female students who felt competent or adequate with technology, and female students who did not feel competent or adequate with technology. The twenty-six females in the sample who felt uncomfortable with technology were subsequently issued a second questionnaire (Appendix 2). These student responses were parsed and condensed into a list of sixteen young ladies who were subsequently interviewed as to their preferences for computer instruction. (Collaboration, peer tutoring, and same sex grouping have already been implemented in this classroom).

The scope of this research was to look for behaviors that would help female students not well served by the standard male centered approach commonly employed for instructing students in technology (Mangione, 1995). The average classroom pits students against applications in a manner commonly preferred by male students. Females prefer interpersonal interactions as a highly regarded factor contributing to their aesthetic comfort with computers (Hanor, 1998). Therefore, an effective teaching strategy to positively influence female comfort with technology would certainly address this critical interpersonal need. Four behaviors were identified as serving a beneficial purpose and given the following identifiers: "Directed Instruction", "Stand by Me", "Kneeling Down", and "Personal Session".

"Directed Instruction" is what students called giving general instructions to a particular individual student. When a problem was encountered, the confused

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student asked for direction or help from me. I responded directly to the question from whatever part of the classroom I was located in at the time the question was posed. During especially busy periods of the day I would query a student, "What's the problem?" when the student who raised her hand. After a brief explanation of the problem, I would suggest an appropriate remedy for that particular problem. I generally moved toward the student, or was in the process of moving towards the student when the question was asked, arriving in a position standing behind the student so that the computer monitor was visible to me.

To indicate particular spots or menu options on the computer screen, I would use a standard pointer, yardstick, laser pointer or finger. (Use of the finger necessitated my leaning over the student from behind their seated position, a somewhat uncomfortable position for both student and me.)

"Stand by me" is an adjustment to the previously described directed instruction. In this behavior I never gave advice or explanations until I was standing in a position adjacent to the student's seat and computer. Seldom did I use a pointer of any type, using my index finger instead. The name given to this teacher was so-named by a student in her journal. She stated, "I like it best when you stand by me".

"Kneeling Down" is just what the name implies. I would kneel down next to a student station instead of assuming a position standing next to the student. During a post survey interview a female student claimed, "I like it when you're kneeling down next to us..." and another was heard in class imploring me to, "kneel down here a minute!" This position not only appeared to facilitate communication between the student and me because it allowed for easy eye contact, but it also made it less likely that another student in another part of the room would distract me away from the student I was assisting. It also gave me longer periods of time to give explanations and to convey my interest in my students' difficulties, sharing ideas and options. Female students indicated they liked this behavior because it provided interpersonal contact, which they preferred to the more authoritative instruction of pointing to a screen from a distance.

A "Personal Session" was the term given by students to describe a mini-lesson designed to explain the area of difficulty in a very thorough, extended manner. In this behavior, I might use many of the options described in the previous behaviors, as the personal session often involved more than one question. It usually involved me pulling up a free chair to sit comfortably while taking time to completely explain the details to the student. The "session" might last several minutes. Some students told me that this technique was a strange balance between being extra helpful and feeling too much like a lecture.

Over the course of the next several weeks, each of the four teacher behaviors was implemented on a rotating basis. Using one behavior each day, the rotation of all four behaviors through four iterations took 32 school days. At the conclusion of the trial period, students were requested to journal their thoughts concerning which teacher behavior for assisting them through

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computer difficulties was most helpful. They were asked to relate which behavior was most effective in not only helping them fix their problem, but giving them a sense of accomplishment and the confidence to work through the next problem on their own. Which behavior created the most confidence?

Findings

"Directed Instruction", was not a particularly female friendly technique because it provided very little interpersonal interaction between the teacher and student and always made the student's difficulties public. The female students indicated feelings of embarrassment about their computer difficulties. The girls didn't appreciate my use of laser pointers or yardsticks. Some girls would cover their monitors with their hands and say, "Just tell me, don't use that pointy thingy!"

In "Stand By Me" my presence was maintained without any public acknowledgement of student difficulty. The opportunity for communication was left open and I was situated in a closer, more supportive position. "Stand By Me" was favored by female students over "Directed Instruction" but not over the "Kneeling Down" technique. "Stand By Me" did allow for a more private and personal interaction between the student and myself. It also helped alleviate the girl's fears that if something goes wrong while using high-tech equipment, she would not be faulted (Koch, 1994).

"Kneeling Down" is an adaptation of the "stand by me" technique. During the course of this investigation I suffered from lower back pain and was unable to stand in a stationery position for any length of time. To adapt, I assumed a kneeling position that was more comfortable and allowed for lengthy assistance. An unexpected benefit of this position was the leveling of the eye contact levels. On equal levels, the female students appeared to be more willing to ask probing and explorative questions. This added time spent with the student further improved the chances of inter personal connection.

A "Personal Session" for female students became more of an indictment of the student's ability and less of the helpful contact it was intended to be. I often spent more time than the student desired on one subject or problem. Later, students could be heard to say, "Gosh, I don't need a personal session!"

The "Stand By Me" approach had an interesting effect on the students. In many post trial interviews, students spoke of feeling "less like a student" and "not as stupid". The careful observer would note that this perceived acknowledgement of a "best position" is less a matter of position in reference to the computer but more a matter of position as in "authority." "Kneeling Down" also reduces the barrier between the teacher-student relationship. Student journal writings confirmed I was no longer an authority figure, but had become "nicer", "more friendly" and "more like my brother". Journals also indicated students recognized my single goal of "assisting them with a difficult computer problem." Girls consider the teacher as the determining factor where ideas at the computer are given consideration and respect (Hanor, 1998).

An interesting pattern by the students most approving of the kneeling behavior emerged. When these students requested my assistance, they

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immediately, and of their own accord, scooted their chairs to one side and made room for me to kneel. This was a keen indicator these students found this behavior preferable to others. Through their actions they encouraged a kneeling behavior from me. After kneeling students remarked, "I think I can take it from here." This appeared to demonstrate an improved comfort level and increased confidence in the students' own abilities.

One unexpected finding may have roots in cultural lenses. More than once, "Stand By Me" or "Kneeling" techniques created tension and discomfort in students from Korean cultures. Students would visibly tense up, and appear uncomfortable. One student stopped asking questions. Not all cultures encourage the removal of the student-teacher hierarchy.

On the most basic level, we all have zones of personal space. The most proximal zone, the intimate zone, is larger for some cultures than others. These two techniques place the instructor inside the student comfort zone and can be unpleasant for some students. I would caution teachers to watch for clues of discomfort such as fidgeting, leaning away, or quick acceptance of your answer when the problem is obviously more involved. In these cases a teacher should use one of the other techniques that avoid such closeness.

Implications

The logical extension of this research is its application in other teaching situations. Honesty and fairness facilitate closeness. These virtues help develop trust between student and teacher. Through trust, an interpersonal relationship can develop and information will pass between teacher and student quickly and readily.

While the quest of my research was to pinpoint a behavior that would improve student performance, the inquiry instead revealed behaviors that improved student teacher interactions which in turn improved student performance. From this study I learned the most beneficial technique for increasing student proficiency on computer applications was appropriate, affirming input in a pattern welcomed by female students. This occurred most often when I used the kneeling behavior. Being close with level eye-contact helped with girl's needs to be affirmed in their skills, interests and emerging talents (Gilligan, Lyons & Hanmer, 1990).

Conclusion

The teacher behaviors herein named "Stand by Me" and "Kneeling Down" have been determined to be female friendly behaviors. These techniques mandate no special training, no extra time, nor any extra preparation. They require only a caring attitude and the ability to engage students inside their zone of proximal development.

This caring attitude improves student comfort levels in young ladies by meeting their preference to grow and work through interpersonal activities rather than goal oriented missions. It allows girls to work in an atmosphere that makes them comfortable while allowing boys to work in their preferred mode. This shift

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from an authority figure delivery to a teacher-student interactive process allows young ladies the opportunity to work in a manner that is comfortable for them. Equity can be supplied with no detrimental effect on equality.

The question before the education community today is how to minimize behaviors that clash with some students and maximize the end product of education, knowledge. How to take the random and sometimes abstract tools a student acquires and meld them into a cohesive approach to accountability for one's own education. How do we as teachers fan the spark of curiosity into the blaze of continual inquiry? How do we fan one spark and not douse another with water? We start with acknowledging the need for differentiated instruction.

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About the Author

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Appendix 1

Questionnaire

Computer Use Survey

Please fill out this survey truthfully. It is for a class I am taking through GMU. The results will go no further than myself. I will combine this information with other interviews to come up with composite pictures of computer users.

Please mark each question with:
A) I agree completely!
B) I mostly agree
C) I'm not sure
D) I barely agree
E) I never agree, no way!

1. I am in grade 11
2. I am in grade 12
3. I am a girl
4. I am a boy
5. I could explain what a computer is
6. I could explain what a computer does
7. I could explain how it works
8. I feel comfortable with computers
9. I can help others on computers
10. I hardly ever need help with computers
11. I know word processing
12. I know spreadsheets
13. I know databases
14. I know presentation software
15. I know web browsers
16. I know what RAM is
17. I know what a hard drive is
18. I know what a CPU is
19. I know what C: means
20. I know what a folder is
21. I know what a file is
22. I know what a document is
23. I know what DOS is
24. I know DOS
25. I feel comfortable with computers
26. I feel comfortable trying things on my own
27. I feel comfortable with a new piece of software
28. I usually need some help with new software
29. I usually prefer to find things out by myself
30. I usually feel rushed when learning new software
31. I usually look forward to new software
32. When problems arise I usually figure it out myself
33. When problems arise I usually ask my neighbors for help
34. When problems arise I usually call the teacher
35. When problems arise I usually get frustrated
36. When problems arise I usually feel challenged
37. People would say I am good with computers
38. People come to me for help

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Appendix 2

Second Survey

- How would you describe yourself as a computer user?
- Could you describe how you learned most of what you know?
- When do you find a computer application especially difficult to learn/work through?
- When do you feel comfortable working through a computer problem?
- What does the teacher do that makes it easier for you to work through a computer problem?
- What action does the teacher take that makes working through an application difficult?
- What would the ideal teacher do to help you with computer problems?

Appendix 3

Post Behavior Interview Questions

A. When is the teacher most helpful?
Why?
What would make it better?
It wouldn't be as good if he...

B. When is he least helpful?
Why?
What would make it better?
It would be great if he...

C. How would you complete this sentence? I like it best when Mr. L ...

D. What would you like the teacher to know when helping you?