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Action Research:

Effects of Recognition and Coping Strategies

Related to Stress and Test Anxiety in Gifted 4th Graders

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Abstract

The purpose of this study is to share the findings of a three-month project that focused on recognizing and reducing the negative effects of test anxiety on gifted 4th grade students. Test anxiety has been recognized as an inhibitor of test performance among students. It has even been deemed an “invisible disability” (Cheek, Bradley, Reynolds, & Coy, 2002). Its effects on students have been documented across research. Absent in the research, however, are studies specifically related to young gifted students and their perceptions and experiences with test anxiety. This study describes the existence of test anxiety among a self-contained group of 4th grade gifted students, ages 9-10, at a southeastern public school serving intellectually gifted students in grades 2-12. The study discusses specific strategies taught to them to help them recognize the onset and cope with the effects of test anxiety. Pre and post measures were taken using various instruments, and the findings are discussed. The researcher hypothesized that awareness of strategies to cope with test anxiety would help reduce its effects.

Statement of the questions

Will an affective needs component focusing on the recognition of and strategies for coping with stress and test anxiety decrease the negative effects of stress and test anxiety on this group of 4th grade gifted students?

1. Do gifted 4th grade students experience test anxiety? To what extent?
2. Why do gifted 4th grade students experience test anxiety?
3. Are there gender differences related to test anxiety?
4. Can teaching specific strategies to gifted 4th grade students help them to better recognize and cope with test anxiety?

Rationale

On a personal level, I currently have a 5th grade son who is gifted. As a student, this child has been in a full-time gifted school for three years and has consistently been a straight-A student, studying occasionally with excellent work habits and diligence, often winning awards for academic excellence. When this child was invited to serve on a panel discussion at a gifted conference, he engaged in dialogue with a psychologist that revealed things previously unknown to me. Included in the interview were self-reported feelings of test-anxiety, including nausea and sweating, even a bloody nose. Prior to this experience, I honestly paid little attention to stress and test anxiety in my son and in my gifted students. Unaware of the signs and effects, it often went completely ignored and unrecognized. Once made aware of such experiences by my son, the concept of stress and test anxiety among my gifted fourth grade students became the focus of this research project. At that moment, I realized that ignoring the affective needs of some students in my classroom with regard to stress and test anxiety was irresponsible. I recognized that

for years as an educator of gifted students, I had overlooked this component of their education. I concluded that this is an important area of focus to be included in any curriculum for gifted learners.

It is believed that heightened levels of sensitivity, pressures, perfectionism, and expectations of doing well, both from self and parents, all contribute to a gifted child experiencing test anxiety. Although very little is written to address this phenomenon in the gifted classroom or in the lives of gifted students, it must become a growing concern among this special population. Research has documented that test anxiety can have debilitating effects on students. Based on what we know about gifted students and their predisposition to oversensitivities (Silverman, 2003), it is reasonable to believe that this population will benefit from incorporating coping strategies into part of an affective needs curriculum.

It is my belief that these exceptional students can benefit from learning to identify feelings, both emotional and physical, associated with test anxiety and stress management. It is also my belief that by teaching, modeling, and practicing skills and interventions, gifted students can begin to identify and reduce the negative effects associated with such anxiety. Infusing specific strategies and techniques for identifying and reducing anxiety and stress as a part of test preparation and as a component of an affective needs curriculum can help gifted 4th grade students overcome the debilitating effects of this phenomenon. Successful strategies and skills learned in this context can then be transferred to other areas and life skills, including but not limited to musical recitals, sports events, drama productions, oral presentations, or other high stress/high anxiety situations, commonly encountered.

A Review of the Literature

Test Anxiety: What is it?

Brought on in part by high-stakes testing, test anxiety is becoming increasingly prevalent across grade levels and populations of students. Reports of elementary students who cannot sleep the night before an important test or who vomit the day of the test are increasing (Casbarro, 2004). Test-anxiety related headaches and nausea among our youngest students are also on the rise (Casbarro). The phenomenon of test anxiety is real, occurring in all learners. Trent and Maxwell (1980) characterize test anxiety as having potentially debilitating effects, and Hill and Wigfield (1984) have gone so far as to say it can actually create an “invisible disability” (p. 107).

Test anxiety can manifest itself in different ways and in varying degrees in different learners, with effects including intense feelings of worry, fear, and apprehension (Supon, 2004). It can lead to withdrawal, outbursts, overactive behaviors, avoidance of school, crying, illness and other depressive symptoms (Cheek, Bradley, Reynolds, & Coy, 2002). In addition to physical and emotional outcomes, effects can stretch into the academic realm. Students who suffer from test anxiety have reported an inability to recall information when in a testing situation (Mueller, 1980). Some identify that they knew the material before the test, but when put into the testing environment, they were unable to recall the information, thus performing poorly on the test (Cassady & Johnson, 2002).

Research indicates direct connections between emotions, learning, and performance. McCraty (2005) discusses the fact that sustained stress and negative emotions can inhibit the brain’s ability to function properly. Such feelings can impair

higher cognitive processes, such as attention, memory recall, reasoning, problem solving, and creativity, thus resulting in less than optimal test performance. Other research indicates that children reporting lower levels of anxiety outperform peers with heightened levels of anxiety on timed tests (Sarason, 1980). Research also supports the position that brain functions can be improved with positive emotions (McCraty). When examining the research, it indicates that students suffering from test anxiety experience negative effects in many areas.

In getting to the root of why students actually experience the onset of test anxiety, researchers have developed three categories of test anxious students. The first group experiences test anxiety as a result of lack of competence. They lack proper study skills and are simply unable to grasp the concepts being taught. This is recognized during the testing situation. The second group experiences test anxiety from fear of failure. Often they possess strong study skills and are well prepared for tests, yet they are nagged by the fear of failure. It is my suspicion that many of my gifted learners will fall into this group. The third group experiencing test anxiety does so as a result of thinking they have proper study skills when really they do not. Therefore, they realize during the testing situation that they are not prepared for the examination (Supon, 2004). The debilitating effects of test anxiety can hamper the performance of all types of learners.

How does this relate to gifted learners?

Neglect of the emotional aspects of giftedness can be traced to the traditional Western view of emotion and cognition as separate, contradictory phenomena. Only recently have we become aware of the inextricable link between emotion and cognition and their combined impact on individuals of high intelligence. (Silverman, 2000, p.5)

Ignoring the specific emotional needs of the gifted learner is irresponsible and unconscionable. Often the gifted learner can put on the calm face and go about his business in a way where his inner turmoil is undetected. Trends in gifted education, as noted in current research, are placing an emphasis on this integral component in gifted education programming (Silverman, 2000). The recognition and importance of addressing the affective needs of gifted learners is growing, and a targeted focus for such practices that address these needs is on the rise in gifted programming. Often from a distance, it is difficult to detect anxiety in gifted learners. Who would suspect that a child who consistently earns superior grades might be suffering from test anxiety and be in need of coping strategies?

Cognitive complexities and emotional intensities noted by Silverman (1997) can help us to understand why test anxiety can be more of an affective need for gifted learners than for their non-gifted peers. Stress and anxiety are commonly associated with characteristics of being gifted. Heightened levels of sensitivity and vulnerability are often present in gifted learners (Silverman). Excessively high self-imposed standards, academic pressures, and high expectations from family and community can all contribute to such feelings of anxiety (Silverman, 2003).

Dabrowski's research on overexcitabilities (OEs) points to the fact that we do find more people with OEs in the gifted population than in the average population. These inborn OEs are expressed in increased sensitivity, awareness, and intensity. This research specifies that overexcitable individuals often have increased stress reactions (Lind, 2000). If we overlook any of these, we completely miss the opportunity we have to assist gifted students in coping with some school related anxieties. It is not enough to

simply observe stellar test scores and assume a child is sufficiently dealing with the demands placed on gifted learners in a full-time accelerated gifting setting.

Schwarzer (1994) found that students in self-contained gifted classes experience higher levels of test anxiety than gifted peers who are included in regular education classrooms. Speculation can focus on the increased competition of being in a setting with students who are all equally intellectually capable as opposed to being one of only a couple of students with such abilities in an inclusionary setting. The constant inner drive to not only be the best, but to be perfect, can significantly add to levels of stress related to testing.

I would be remiss in not mentioning traits of perfectionism in gifted students. Though no direct link was found between perfectionism and test anxiety per se, it must be noted that gifted students are often displeased with results that are anything less than perfect (Silverman, 2003). Research notes that gifted students are more likely to strive for perfection than their non-gifted peers (Maxwell, 1995; Silverman, 1983). The actual act of taking a test and earning a score of less than 100% would be considered failure in the eyes of a perfectionist. This in and of itself could factor into increased levels of test anxiety among the gifted population. Whereas other learners might judge failure at a 60% with a 40% margin for error, a gifted perfectionist sees failure as anything less than 100%, with no margin for error. Certainly this can contribute to and/or manifest itself into test anxiety. It is safe to conclude that these factors can significantly contribute to test anxious students among the gifted population, specifically in my fourth grade classroom.

What can we do about it?

With test anxiety being a real phenomenon, it is important to find positive methods in helping students deal with it. Most importantly, research indicates a need to raise awareness of the existence, effects, and impact of anxiety and stress in the lives of our students (Casbarro, 2004). Giving students opportunities to express feelings associated with stress and anxiety and realizing they are not alone can have a positive impact (Cheek, Bradley, Reynolds, & Coy, 2002). Teacher facilitated group discussions can help students to identify their feelings and pinpoint their onset enabling them to identify their stress symptoms (headaches, stomach aches, pencil tapping, pacing, etc.). Gifted learners can come to understand what test anxiety actually is and that there are strategies to minimize its negative effects (Lind, 2000).

Art and music can also be used in strategically lessening the effects of test anxiety. Kendrick (1998) puts forth the idea that education through art can allow students to learn about themselves, while simultaneously letting teachers, parents, and peers view their thinking process and inner ideas. To specifically link this to test anxiety, other research suggests that allowing students to draw themselves as calm and successful during a test can minimize test anxiety (Cheek, Bradley, Reynolds, & Coy, 2002). This will be examined during this action research.

Implementing relaxation techniques including the “Stop, Drop, and Roll,” (when feeling the “fire” of anxiety or stress, stop and put down pencil, drop head forward, and roll head while taking three deep breaths) has also been proven to be an effective measure in combating the negative effects of test anxiety (Cheek, Bradley, Reynolds, & Coy, 2002). Other relaxation exercises, physical exercise, asking for help, visualization, and

time management skills can also assist in coping (Lind, 2000). Specific strategies will be introduced, modeled, taught, and practiced with the participants of this study.

Research has documented other methods and strategies in dealing with test anxiety that have been found to have positive outcomes. The PEACEful assessment process (Woodin, 1997) has been shown to decrease anxiety, increase comfort levels, and therefore result in improved test scores. The acronym suggests steps to use when working with a child who is anxious or stressed about a testing situation. By following these prescribed steps, anxiety can be minimized, allowing the learning to display maximum potential. Steps include preparation, encouragement, acclimation, consistency, and evaluation (Woodin). Several of these can be incorporated into methods to help alleviate anxiety and stress. Additionally, developing strategies to prevent stress including time for fun, supportive relationships, humor, and tolerance for imperfections have also been found to be an effective means for coping (Lind, 2000).

Why will this be successful in a gifted setting?

In synthesizing the results of much research, it is my hypothesis that gifted students can successfully reduce the negative effects of test anxiety. Past research indicates that intellectually gifted students prefer efficient solutions to problems and are more likely to apply problem-solving skills than their non-gifted peers (Dubow, 2004). It can be surmised that gifted learners, if taught specific strategies to help with test anxiety, would be likely to employ them.

Research also recommends teaching gifted students specific strategies for disciplined, reflective problem solving (Manning, Glasner, & Smith, 1996). Studies report that gifted learners more often use metacognition and self-regulated learning

strategies than non-gifted peers (Manning, Glasner, & Smith, 1996). For parents and educators of the gifted, it is important to note that well-developed metacognitive and self-regulating skills are not simply there because a child is born gifted. Instead, a conscious effort needs to be made in equipping gifted students with such tools, so they may successfully employ them (Manning, Glasner, & Smith, 1996). These researchers even go so far as to state, “Self-regulated learning pedagogy may be the missing processes for problem solving during task performance for some gifted learners” (p. 7).

The same research suggests an easy method to teach gifted students such skills, including a five step process of self-regulating. The ASK (define the problem), TELL (self-guide), TRY (self-cope), CHECK (self-correct), CHEER (self-reinforce) method was found to increase confidence and performance among gifted learners (Manning, Glasner, & Smith, 1996). This method was explored and assimilated, modeled, and taught in this research project. It was the researcher’s hypothesis that such strategies would be useful in reducing the effects of test anxiety among these gifted 4th grade students.

Content, Setting, Participants, Background

This study took place in a full-time school for gifted students in the southeastern United States. The school consists of approximately 2,000 students in grades 2-12, who have been identified as gifted and qualify for full-time gifted programming in the county. The school was established in 1969 specifically for the intellectually gifted student. It is a public school open to any student in the county who meets eligibility qualifications. The students who participated in the study were randomly assigned to my homeroom.

The sample population includes a fourth grade classroom of 21 students, ages 9-10. Eight are males, and thirteen are females. Nineteen are white, one is Mexican, and one is Asian. All have previously been in the school, so none are new to a full-time gifted setting with an accelerated curriculum. All students remain in the classroom each morning for one period of math instruction and two periods of language arts instruction. Student then have different classes in the afternoon, one period each for the rotating wheel class (French, physical education, music, computers, art), science, and social studies.

Within the first two weeks of school, specific activities were integrated into the curriculum with the intent of creating a safe “classroom community.” Emphasis was placed on our three “R’s,” being respectful, resourceful, and responsible. Students were made to feel safe amongst us in our learning environment, a necessary component in implementing a successful project. Books were read about risk taking, being different, persevering, and creative problem solving. Value was placed on all of these components. A great deal of time was spent teaching about learning styles, strengths and weaknesses, and the diversity within the walls of our classroom. Many personal inventories were used to help students learn about themselves, their own personalities, and their learning preferences. Value was placed on each individual student and their personal styles, likes, and dislikes.

A calendar classroom management system has been implemented since the start of the school year, emphasizing components of a healthy learning environment. The “Be Rules” are consistently used across fourth grade to teach and reinforce positive behaviors and to hold students accountable. Tallies are given each time a student blatantly breaks a

“Be Rule.” Rewards are given to those students who earn fewer than two tallies per month, usually the entire class. The Be Rules are as follows:

BE Courteous

- Be on time to class.
- Enter quietly and courteously.
- Take your seat immediately.
- Wait quietly for instruction.

BE Prepared

- Bring books, agenda, and necessary materials to class.
- Have your calendar signed by a parent every Friday.

BE Respectful

- Raise your hand to ask a question, make a comment, or ask for help.
- Refrain from unnecessary talking or other actions that interfere with learning.
- Treat all books and equipment with care.

BE Responsible

- Use class time wisely.
- Begin assigned work immediately.
- Finish required work before engaging in other activities.
- Complete assigned work (class/homework) according to directions and turn it in on time.

BE A Contributor

- Make positive contributions to the class.
- Treat your teacher and classmates with respect.

It is my belief that it is only with the establishment of a safe learning environment and a setting where students feel valued and important that a project such as this is possible.

Methodology

Through a mixed methods approach, I was able to closely examine the research questions. The research is classified as quasi-experimental, as it has included an independent variable but no random assignment to conditions. All measurement tools were administered as pre and post measures, once at the very beginning of the study in

October and again following direct instruction and interventions related to specific methods and strategies for identifying and coping with test anxiety in December.

The primary measurement tool is the *Test Anxiety Inventory (TAI)*. This twenty-item inventory is used to measure frequency of anxiety symptoms before, during, and after testing sessions (Spielberger, 1980). Participants' responses were measured on a 4-point scale ranging from "Almost Never" (1), to "Almost Always" (4). *TAI* scores can range between 20, showing very little test anxiety, to 80, indicating the highest levels of anxiety (Spielberger, et al 1980). Test-retest reliabilities for TAI-T are reported for groups of high school, college, and graduate students over time periods ranging from two weeks to six months. Reliability was in the range of .80 to .81 for two-week to one-month periods with all groups. After six months, the reliability was .62 for a group of high school students. The alpha coefficients for TAI-T ranged from .92 to .96; for the subscales, alphas ranged from .83 to .91 for TAI-W, and from .85 to .91 for TAI-E. The relationship between the TAI and its subscales with other anxiety measures (e.g., Sarason's Test Anxiety Scale (TAS), Liebert & Morris' Worry and Emotionality Questionnaire (WEQ), the STAI State and Trait Anxiety scales, and the STAI State Anxiety scale administered under examination stress conditions) all provide evidence of convergent validity. The correlation between the TAI-T score and the TAS was sufficiently high (.82 to .83) to suggest that the two scales measure essentially the same construct (Nova Southeastern University, <http://cps.nova.edu/~cpphelp/TAI.html>).

Additionally, I developed a measure to probe into the students' awareness and prior knowledge of test anxiety. A simple true/false measure was designed to determine whether or not students had any exposure to the concept of "test anxiety." Two questions

ask students to “explain” if necessary, thus including a qualitative factor. Upon its development, this measure was used in another 4th grade classroom, to be certain students could clearly understand and answer the questions. Results showed this measure to elicit clear and concise responses. This measure was used as a pre/post measure during the action research to help determine the success of the interventions.

Prior to beginning the data collection portion of the project, students were required to return a signed informed consent document (see Appendix). Students’ responses on the pre and post measures were coded by number and gender. Identification remained consistent allowing me to measure each student’s pre and post results. Because this school is a once-a-year admittance school, no new participants were added to the study. It is possible to lose students, though this is very unlikely. In my three years of teaching at this school, I have not yet had one student leave during the academic school year. Due to the priority placed on education, parents and families seem committed to providing their children with uninterrupted academic programs.

In between survey administration, I used various techniques to integrate awareness and relaxation methods related to test anxiety. Activities were done as a whole class. Initially, I had planned to work with a couple of small focus groups and differentiate instruction. Instead, the data collected on the pre assessments led me to believe that the entire class would benefit from such instructional practices. These strategies were implemented during language arts time. Components of TestEdge, a program utilizing specific test-taking strategies, provided students with visuals of what is physiologically occurring with responses to stress or anxiety. Such methods allowed me to teach my students to alter their thinking and identify and cope with stressors. This

helped them perform to their potential, rather than to be hampered by the negative effects test anxiety can have on brain function.

Qualitative data was collected throughout the course of the study. Overall discussion of test anxiety began shortly after the pre-measures were given. Students openly discussed feelings and shared experiences about test taking. I documented student responses, tape recorded conversations, and collected activity sheets and pages that elicited responses to questions about and aspects of anxiety. This allowed me to sift through responses at a more thorough level.

Time was devoted for approximately thirty minutes twice per week where students were given direct instruction related to dealing with stress and test anxiety. I first defined it, explained why some students experience it, and discussed actual experiences felt by students. Students were also made aware of the relationship between stress and performance. After students had a strong understanding of the concepts of stress and anxiety, I began to incorporate some identification and coping strategies noted in the research. Students were asked to use art as a way to depict themselves in a testing setting. They were then asked to illustrate themselves in a relaxing setting. I compared the results to see if there is any significant difference, noting specifically facial expressions and use of color.

I then modeled and taught the “Stop, Drop, and Roll” technique and the ASK, TELL, TRY, CHECK, CHEER method. A great deal of emphasis was placed on the Freeze-Frame technique, a five-step process to aid in dealing with stress and anxiety. Students were taught to (1) recognize the feeling of stress, (2) shift the focus from “brain to heart” by taking deep breaths, (3) make an effort to appreciate and focus on a positive

emotion, (4) ask what action would lessen stress, and (5) notice a change in the way of thinking and how one is feeling about the situation (McCraty, 2005). Students were reminded of such strategies before testing situations both orally and with visual aids and posters throughout the room. Any time a student was observed using them, it was noted. Discussions took place following testing situations. This allowed me to see if students were successfully employing these methods. Continued support was given to students and it is hoped that reminders before tests encouraged students to apply the newly learned strategies.

Following two months of implementation, it is my hope that students now have simple affective strategies for recognizing and dealing with the negative effects of test anxiety. This was measured in the post assessments. Results were coded to correlate with the pre-assessment results. I used a single sample t test in comparing the average scores of a single sample on a single variable, teaching of specific skills and strategies for dealing with test anxiety.

Description

I cannot, in my opinion, overstate the importance of a safe learning environment. It is my feeling that if I attempted to do this action research any earlier in the school year, my results would not have been the same. I often feel as though it takes me at least two months to really come to know my students, establish a trusting relationship, and create a safe learning environment where students have no fear or reservations when it comes to openly sharing thoughts, feelings, and ideas. This was a vital component in all that occurred with this class of students.

After pre measures were administered, we began to have open discussions about the phenomenon of test anxiety. I talked about this action research project, why I was doing it, and the fact that the idea for it came from an experience I had with my own son. It immediately made my students feel relieved to know other students shared their feelings. Several indicated, following our very first discussion, how it was a surprise to find they were not the only student feeling anxious about test taking.

Over the course of the next several weeks, continued data was collected and an education process related to dealing with test anxiety was implemented. In one exercise, students were given a list of twenty adjectives including words such as, “motivated, annoyed, worried, angry, peaceful, surprised, frustrated, happy, etc.” and asked to write words in blanks that described different events including, “play at recess, take a test, do homework, write a story, do math, etc.” In all twenty-one cases, a “negative” emotion was written into the blank “take a test.” In the same lesson, the question was asked, “How do you feel about taking tests?” Thirteen illustrated faces depicted emotions from happy, confident, surprises, excited, to nervous, angry, scared, or worried. Students were free to choose as many or as few as they wanted. A very few included “positive” emotions and “negative” emotions, but the majority included only negative emotions. No student responses included only positive emotions.

In another lesson, students were given a “Body Map” and asked to put stars on parts of the body where they usually feel stress. The most common places indicated by students included heads and stomachs. A few students marked legs, arms, and hands.

Students were then taught about the physiological effects of stress and anxiety. I discussed the body’s response to stress being one that caused the release of cortisol, and

the body's response to appreciation being one that caused the release of serotonin.

Students were taught that stress causes their bodies to be out of sync, often impeding their ability to think clearly and make good decisions, while appreciation allows their brains to focus and perform at their best. These important facts were discussed on several different opportunities.

Students were guided through a discovery process that allowed them to actualize a feeling of appreciation. Students were then asked to illustrate their "appreciation feeling." The majority of students drew pictures of themselves with their pets, parents, or favorite stuffed animals. Students were then introduced to the five-step relaxation technique, known as the Freeze Frame. They were taught to recognize the feeling of stress, shift their focus by deep breathing, experience appreciation with their picture from the earlier lesson, ask themselves how to deal with their feelings in a way to lessen their stress, and notice the change in their feelings. They were reminded to practice their five-step process before tests. Posters were hung around the room to reinforce this process, and I often led students in this process throughout the course of this study.

Students were also taught the importance of self-talk. I reminded students that when encountering a hard test question, that one question might be enough to cause them to start getting out of sync, but missing one question would not cause them to do poorly on a test. Positive self-talk like, "I'm smart. It's only one question. I know the answers to all the others. I'm going to pass this test and do fine," were all statements discussed. We compared those with how students would be affected if they said, "I should have studied more. I'm so dumb. I bet everyone else knows the answer to this question. I'm

going to fail this test.” Students all agreed that telling themselves positive things would have a much better effect on the outcomes of their tests than saying negative things.

Some time was spent discussing the importance of proper nutrition and optimal amounts of sleep. Test-taking strategies were also taught. Students were encouraged to use the strategy of doing easy questions first and skipping harder ones. Students were reminded to use the process of elimination in narrowing answer choices. Proper bubbling techniques were also discussed. Over the course of two months, these themes were thoroughly investigated and discussed.

Following two months of direct instruction at least twice per week for thirty to forty-five minutes, the Test Anxiety Background Knowledge Survey and the Test Anxiety Inventory were re-administered.

Results

Pre assessments were administered prior to any discussion surrounding test anxiety and stress.

Test Anxiety Background Knowledge Survey

Pre Assessment (October)

In examining the Test Anxiety Background Knowledge Survey, twenty-one students, prior to this action research, had never discussed test anxiety in school. All twenty-one subjects answered “False” to the question on the pre-assessment, “I have had a teacher talk to me about test anxiety.” Only two students on the pre-assessment answered “True” to “I know what test anxiety is.” When asked to explain, both of these students did go on to write satisfactory explanations. Five students indicated that a teacher had taught them relaxation techniques for test taking situations, and when asked

to explain, all mentioned taking deep breaths, while two mentioned stretching exercises. Sixteen students had not been taught any strategies or techniques. Seventeen students on the pre assessment responded “True” to the question, “Even if I have studied for a test, I feel nervous about taking it,” indicating that only four students did not feel stressed about taking a test for which they studied. The final question for this survey, “There are things I can do during a test to make me feel better when taking it,” had nine students respond “True” and eleven respond “False.”

Test Anxiety Inventory

Pre Assessment (October)

The Test Anxiety Inventory (TAI) provided more in-depth feedback in specific areas related to testing situations. The results for question one were reversed scored. In looking at the table of results of the survey, in all questions, the higher the number, the higher the level of anxiety. Question twelve proved to yield the highest levels with an average of 3.29 on a Likert scale of 1 to 4. When asked to respond to the question, “I wish examinations did not bother me so much,” thirteen students circled 4, indicating “Almost always.” Question one also proved to create high results on the inventory. That particular question measures anxiety related to actually taking a test. Eight students marked “Almost never” to the question, “I feel confident and relaxed while taking tests.” Overall, the sample average was a 3.1, the second highest level of all twenty questions asked. Question nine also yielded relatively high levels of anxiety. “Even when I am well prepared for a test, I feel very anxious about it,” elicited six responses of 4 (almost always), with a question average of 2.95.

Composite scores on the TAI can range from 20 (lowest) to 80 (highest). In looking at individual students' survey results, ten students have composite scores of 50 or greater. Three students showed exceptionally high levels of anxiety, with one scoring a 72, another scoring a 68, and a third scoring 61. Three students showed very low levels of anxiety with scores of 24, 29, and 32.

Once data was collected from these assessments, I began to engage in informal dialogue with my students. On the very first day of discussion, I constructed a T-chart on the white board with "emotions" on the left and "body" on the right. I then posed the question to the class, "How do you feel when I say, 'OK, it's time to take a test?'" I asked students to first explain their emotions, or how they felt inside, and then to explain their physical feelings, how their bodies felt. Responses under "emotions" included: worried, anxious, small, nervous, bored, stressed, shocked, overloaded, and one student said, "I feel like all the happiness and excitement is sucked out of me." Under "body," students responded with: hungry, tight, sweaty, tingly, nauseous, shaky, pressured, cold, jelly-like, and achy.

During another session, I listed fourteen events/situations and gave each student three sticky notes. From the list on the board, students were asked to select the top three that caused them to worry and then to write each one on a separate sticky note. Fifteen students selected "tests." Second to tests was being teased (9), followed by after school activities (8). Homework and trouble with friends each earned 6 tallies. During the discussion, it is important to note that the after school activities themselves did not create the stress or worry. Those feelings were created as students worried that because they

were at these activities, they would not have time for friends, family, homework, and studying.

In the course of another lesson, we discussed how and when students were using their five-step relaxation technique. I constructed a T-chart on the board with “before” on the left and “after” on the right. Students were asked to describe how they felt before the five-step strategy and then how they felt after they had used it. “Before” responses included mad, annoyed, frustrated, confused, angry, upset, overwhelmed, scared, and aggravated. “After” responses include relieved, relaxed, calm, peaceful, happy, and confident.

As noted earlier, the students who participated in this study are in my classroom for three periods of instruction per day. All students go to other classrooms each afternoon for instruction in social studies and science. During the course of this study, I had several other fourth grade teachers (there are nine of us total) approach me and ask about my action research. They indicated that the students we share were discussing their relaxation techniques in their classes and were actually attempting to teach other students who were not able to participate in this study.

Test Anxiety Background Knowledge Survey

Post Assessment (December)

The difference between the pre and post results on this survey are dramatically different. All twenty-one subjects indicated on post findings that they know what test anxiety is and went on to offer satisfactory definitions. Many of these included the physiological effects (“When you get stressed, your brain makes your body send stuff out that makes it hard to concentrate and remember what you studied.”). All subjects

reported having had a teacher talk with them about test anxiety, and all reported that they learned relaxation techniques from a teacher. The explanations often included the five-step Freeze Frame technique. Only five students indicated feeling stressed about a test even if they have studied, and sixteen report they do not feel stressed about a test when they have studied. Twenty students indicated that they know there are things they can do when taking a test to feel better, while one student indicated “False” to that question.

Test Anxiety Inventory

Post Assessment (December)

Post assessment results on the TAI show that the overall levels of anxiety decreased in the sample population. On average, the sample improved 15.6 points, or a 26% improvement. Two students who had relatively low levels of anxiety on the pre assessment showed no change. One student showed an improvement of 28 points (46%), another of 27 points (45%), and a third of 24 points (40%). Thirteen students showed improvement of 25% or greater.

In analyzing the data by gender, there is no significant difference between the entire sample population results and only males or the entire sample population results and only females.

My data came from the 21 students in my class. To be able to generalize my findings to the general population of all gifted 4th grade students, I would need a simple random sample (SRS) of gifted 4th graders. Since this is not possible I am going to assume that my 21 are an SRS. I did look at the distribution of differences in scores and it is not unreasonable to assume that they came from a normal distribution, this too being a requirement of the t-distribution. The minimum difference was 0 and the maximum

difference was 28 with the mean being 15.6 and the median 16. The sample standard deviation was 7.8. In addition, the normal probability plot is almost linear. All of these are indications of a normal distribution for the observations.

Also, the split stemplot of the differences looks like this:

```

0 00
0 6
1 0112
1 56789
2 34
2 7

```

This too indicates a normally distributed set of observations.

In about seven weeks, the mean change in the Test Anxiety Inventory was 15.619, plus or minus a margin of error of 3.565, at the 95% confidence level or, 15.619, plus or minus a margin of error of 4.863, at the 99% confidence level. I am 95% confident that the mean change in the Test Anxiety Inventory is somewhere between 12 and 19.2 points, and I am 99% confident that the mean change in the Test Anxiety Inventory is somewhere between 10.8 and 20.5 points. This is statistically significant. I did a paired sample t-interval on the girls' scores vs. the boys' scores, and it showed that there is no discernable difference between the boys' and the girls' scores.

Discussion

The specific research questions included:

1. Do gifted 4th grade students experience test anxiety? To what extent?
2. Why do gifted 4th grade students experience test anxiety?

3. Are there gender differences related to test anxiety?
4. Can teaching specific strategies to gifted 4th grade students help them to better recognize and cope with test anxiety?

Though many believe that test anxiety is a real phenomenon, the fact that very little research is available in looking at this phenomenon in younger children could be proof that it has been ignored or overlooked. Also, there was no research that specifically linked test anxiety and young gifted learners. I can easily understand why this is the case. As a teacher of gifted students, it was not until my own son revealed his experiences that I even considered it might affect gifted students from a young age. Once clued in, it made perfect sense. Up until this revelation, I perceived the straight-A students and even others who walked into my classroom as students who easily coped with the demands of an advanced gifted curriculum. I never had stopped to consider that some of these students were suffering from high levels of anxiety. I was unaware of signs and indicators until doing the research for this project.

Certainly increased levels of anxiety, overexciteabilities, high levels of expectations from self and families, and perfectionistic tendencies can all contribute to feelings resulting in test anxiety. This population more than any other, for reasons previously explained, would seem prone to it. It is a phenomenon that has long been overlooked, and in a time when pressure of standardized tests weighs heavily on the minds of all, it does not seem as though it will improve or vanish on its own. It is time it is addressed.

It is likely that gifted students are more prone to experiencing this phenomenon than their non-gifted peers. It can be surmised that gifted learners, if taught specific

strategies to help with test anxiety or anxiety in general, would be likely to employ them. In gathering the information from my post assessments, I learned that my students used their FreezeFrame process beyond the walls of the classroom. Individuals reported employing this strategy at a piano recital, basketball free throw line, tennis match, fight with sibling, playground, and several other situations common in the lives of 4th graders.

Two of my students, upon returning to class after their elementary school drama club had performed for the entire elementary population, reported that the cast, just prior to taking the stage, was very stressed. These two students took it upon themselves to lead the whole cast of fifty in the FreezeFrame relaxation technique. This supports past research indicating that intellectually gifted students prefer efficient solutions to problems and are more likely to apply problem-solving skills than their non-gifted peers (Dubow, 2004). It can be surmised that gifted learners, if taught specific strategies to help with test anxiety or other high-stress situations, would be likely to employ them.

Though I did not compare my sample to any other, the result of my action research with this group of 21 gifted 4th graders has changed the way I approach gifted education. Giving my students a voice and allowing for open discussion on this topic, I learned that many of my gifted 4th graders, not unlike my son, do in fact have feelings of anxiety when related to tests.

In schools across the county, high-stakes tests are administered to even our youngest of students. Some states have legislated financial bonuses to teachers whose students perform well on such measures. Some teachers spend months with test prep materials, black-line dittos, and test-taking practice. It only makes sense that some students would internalize this pressure and feel the strong need to do well on something

perceived as so important.

Classroom assessments could render the same feelings. The need to achieve good grades, especially among the gifted population, is pervasive in many homes. As previously noted in the research, Schwarzer (1994) found that students in self-contained gifted classes experience higher levels of test anxiety than gifted peers who are included in regular education classrooms. Speculation can focus on the increased competition of being in a setting with students who are all equally intellectually capable as opposed to being one of only a couple of students with such abilities in an inclusionary setting. The constant inner drive to not only be the best, but to be perfect, can significantly add to levels of stress related to testing. In looking at some of the drawings done by students, one girl actually drew a picture of herself taking a test with a thought bubble over her head reading, "Oh no, mom and dad are going to kill me if I fail." Other students indicated feeling the need to do well to please parents.

I was not at all surprised to see, that of the thirteen stressors put before my students, tests easily ranked number one. I was overjoyed to see that not one student in my class feels stressed over making friends. I would like to think that it has something to do with the safe learning environment and classroom community I worked so hard to create from the first day of school. What does concern me, however, is the fact that many of my students (8) are stressed by their extracurricular activities. As noted, discussion did bring forth some interesting points. Baseball, dance, or other activities do not stress my students. Those who indicated stress from such activities went on to note that they were stressed because of the time the activities consumed and took away from time with families, friends, or time spent studying or doing homework. They enjoy the activity but

not necessarily the amount of time the activity takes from other areas. My students' activities include but are not limited to music lessons, dance, soccer, baseball, tennis, swimming, football, tae kwon do, art, horseback riding, girl scouts, religious school, archery, drama, fencing, gymnastics, and golf. Additionally, some of my students have activities five nights per week and again on Saturday. It is easy to see why these activities could lead to increased levels of stress. This is certainly something I will share with parents at an evening information session to discuss the findings of this research, as many of my students have not previously discussed this with their families.

The positive results of this study give strong reason to consider including some sort of test anxiety strategies in teaching even our youngest gifted learners. My sample population, through several class discussions, inventories, and activity sheets, indicated high levels of anxiety. Rather than seeing those results in a handful of students like I expected, it was present in the majority of my students. On average, the sample improved 15.6 points, or a 26% improvement. Two students who had relatively low levels of anxiety on the pre assessment showed no change. One student showed an improvement of 28 points (46%), another of 27 points (45%), and a third of 24 points (40%). Thirteen students showed improvement of 25% or greater. The highest overall score on the TAI pre was a 72, belonging to a boy. The second highest belonged to a girl. The lowest overall score on the TAI pre was a boy while the second lowest belonged to a girl. Overall, as noted by the paired sample t-test, there was no statistical significance in the pre results, post results, or overall improvement by gender. This is reason to believe, at least in this sample, that girls and boys experienced similar levels of anxiety.

The results of the Test Anxiety Background Information Survey show remarkable

results and give many in the field of gifted education reason to take note. Prior to beginning this action research project, not one single student from the sample had ever discussed test anxiety with their classroom teacher and only two even knew what it was. Is this because teachers are unaware of test anxiety or unaware that their students suffer from it? The fact that five students reported teachers had taught them some sort of relaxation technique for test taking (deep breaths) might be evidence that some teachers did at least recognize students feeling stressed and were willing to at least try to help these students.

Questions for Further Research

It is my strong belief that this affective need for young gifted students has long been unrecognized. Quite honestly, had my son not made me aware of it, my action research would have focused on an entirely different topic. Instead, conversation with him led me on this path, and now I feel a tremendous responsibility to share these results with others in the field of gifted education.

Certainly I would like the opportunity to explore this with a larger sample. I hope to write a grant and gain funding and approval to pilot this project in the 2007-2008 school year with the entire fourth grade at our school, a sample of nearly two hundred students. I would also be interested in some sort of longitudinal study that followed these students over a period of time in order to determine whether or not they continue to use these strategies beyond this year. Is this a life-skill that they can continue?

Since the research states that gifted students in a full-time gifted setting indicated higher levels of stress, I am interested in learning the results of a study like this conducted in a heterogeneous group, including gifted students. Would gifted students

show lower levels of anxiety if mainstreamed in a regular education classroom? Would they feel less pressure and therefore less anxiety?

I also wonder about student perceptions of parent expectations. Though it is sometimes easy to assume parents are the ones putting pressure on the kids, I have seen firsthand situations where students themselves apply the pressure to do well. Though parents have reported being happy with As and Bs, as long as the effort is there, some students are thoroughly devastated by anything less than an A. I struggle with the amount of emphasis being placed on grades and wonder what kind of learning experiences some of these students would have if we eliminated grades and used portfolios or anecdotal assessments. Would this reduce stress and anxiety? Would it make the stress and anxiety associated with the inevitable (standardized high-stakes tests) worse as students would not have “practice” with test taking skills/situations?

I am also concerned about the amount of stress students feel as a result of their extra curricular activities. Though we all strive for balance in raising our children, parents need to see that more is not necessarily better. Managing the workload, enjoying family, and having time to relax with friends, seems like a lot to juggle. To include activities every night of the week would seem a bit much on any adult. It is no wonder my students, at ages nine and ten, are feeling the effects of the stress and pressure. Parents need to consider each child individually and consider prioritizing activities, leaving plenty of unstructured downtime for simple being a child. I would like to see more research on the effects of over-scheduling our children and a movement to possibly cut back.

One major component that I believe made my project a success, as noted earlier, is the classroom community and safe learning environment I worked so hard to create with my students. The trusting relationships shared among all of us involved, the fearless risk taking, and the unconditional acceptance among us as a community allowed my students to openly and freely express their true feelings, with little fear of being teased or ridiculed by classmates. The importance of this component cannot be overstated. I believe my students were honest about their feelings, allowing me to collect relevant and accurate data. I wonder if this program would have similar results if done in a larger setting with a guidance counselor. I suspect that without teacher buy-in, strong relational bonds between teacher and students, and continued in-class support, improvement would not be so strong. It is my belief that my delivery method will result in the greatest improvement, though it is purely speculation, as I have nothing to which I can compare my results.

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Test Anxiety Inventory

I feel confident and relaxed while taking tests.

1	2	3	4
Almost never			Almost Always

While taking final examinations I have an uneasy upset feeling.

1	2	3	4
Almost never			Almost Always

Thinking about the grade I may get in a course interferes with my work on tests.

1	2	3	4
Almost never			Almost Always

I freeze up on final exams.

1	2	3	4
Almost never			Almost Always

During exams I find myself wondering whether I will ever get through school.

1	2	3	4
Almost never			Almost Always

The harder I work at taking a test, the more confused I get.

1	2	3	4
Almost never			Almost Always

Thoughts of doing poorly interfere with my concentration on tests.

1	2	3	4
Almost never			Almost Always

I feel very jittery when taking an important test.

1	2	3	4
Almost never			Almost Always

Even when I am well prepared for a test, I feel very anxious about it.

1	2	3	4
Almost never			Almost Always

I start feeling very uneasy just before getting a test paper back.

1	2	3	4
Almost never			Almost Always

During tests I feel very tense.

1	2	3	4
Almost never			Almost Always

Test Anxiety Background Knowledge

Indicate your response to each item by marking the following statements true or false based on your experience. If an explanation is needed, please be as thorough as possible.

1. I know what test anxiety is.

FALSE TRUE

If you marked TRUE, please explain your idea of test anxiety in the space below.

2. I have had a teacher talk to me about test anxiety.

FALSE TRUE

3. I have had a teacher teach me relaxation techniques for test taking.

FALSE TRUE

If you marked TRUE, please explain what you have been taught in the space below.

4. Even if I have studied for a test, I feel nervous about taking it.

FALSE TRUE

5. There are things I can do when during a test to make me feel better when I am taking it.

FALSE TRUE

October 23, 2006

Dear Parents,

As many of you know, I am finishing up my master's degree in gifted education through the University of South Florida. One of the final requirements is an action research project, where I've had to examine my classroom population, determine an aspect of it I'd like to change/improve, and develop a project that will allow me to do that with measurable results. I spent the summer researching test anxiety and gifted learners and believe this affects our children more than most people suspect it does. For that reason, the focus of my action research is teaching my students to identify and cope with the negative effects of test anxiety.

The school and the students who participate in this study will remain unnamed. Students will be given pre and post measures to determine the impact of my instruction in hopes of seeing positive results. The whole class will receive instruction approximately twice per week for thirty minutes over the next six weeks. Instruction will focus specifically on tools to help students reduce anxiety related to testing or other stressful situations. They will also be taught strategies to help with responding to challenging test questions and habits for good test preparation.

I am hoping you will allow me to use the data I collect from your child in my study. Students are in no way being placed in a harmful situation. I will be videotaping, allowing me to review my teaching methods and class discussions. Your child's image may appear in my taping. I will need to submit a fifteen-minute segment of my teaching to my advising professor, Dr. Elizabeth Shaunessey at the University of South Florida. Only she will view this, as she evaluates my work.

By signing and returning this form, you are agreeing to allow me to potentially use your child's responses to pre and post measures in my research and allowing their image to possibly be used in the taping of my classroom. If you are uncomfortable in any way or have any questions, please contact me.

I agree to allow my child _____ to participate in

Amanda Simon's action research related to test anxiety in gifted learners.

Name

Date

Pre and Post Results: Test Anxiety Inventory

Student	1pre	1post	2pre	2post	3pre	3post	4pre	4post	5pre	5post
#1	2	2	4	3	3	2	4	2	4	3
#2	3	3	4	4	2	1	4	4	2	1
#3	4	3	2	1	3	1	1	1	4	4
#4	4	2	3	1	3	1	2	1	1	1
#5	4	2	4	1	3	2	3	1	3	1
#6	1	2	4	2	3	2	3	2	2	1
#7	3	2	4	2	1	1	2	1	1	1
#8	2	3	3	2	3	2	3	2	3	1
#9	4	2	2	1	1	1	2	1	1	1
#10	2	2	2	2	1	1	1	1	1	1
#11	3	3	4	3	3	1	2	1	2	1
#12	4	4	2	1	1	1	1	1	1	1
#13	4	3	3	1	1	1	2	1	1	1
#14	3	2	2	2	3	1	2	1	4	1
#15	3	3	2	1	4	2	4	1	2	2
#16	2	1	4	3	3	2	3	4	3	2
#17	4	4	1	1	1	1	1	1	1	1
#18	3	3	2	1	1	1	1	1	1	1
#19	3	2	3	1	1	1	1	1	1	1
#20	4	4	3	2	1	3	3	1	2	1
#21	3	2	4	1	4	1	2	1	3	1
total	65	54	62	36	46	29	47	30	43	28
mean	3.1	2.57	2.95	1.71	2.19	1.38	2.24	1.43	2.05	1.33

Student	6pre	6post	7pre	7post	8pre	8post	9pre	9post	10pre	10pos
#1	4	3	4	2	3	2	3	3	3	2
#2	3	1	4	1	3	3	2	1	4	1
#3	1	1	2	1	1	1	3	1	4	1
#4	3	1	2	1	3	2	2	3	3	2
#5	3	2	2	2	2	1	3	1	1	1
#6	2	1	2	2	3	3	3	1	2	1
#7	1	1	1	1	2	1	4	2	4	2
#8	2	1	2	1	3	2	3	2	3	2
#9	3	2	2	3	1	1	4	1	3	1
#10	1	1	1	2	3	3	3	2	4	2
#11	4	4	2	2	3	3	4	3	4	4
#12	2	1	2	1	1	1	2	1	2	2
#13	1	1	1	1	3	1	4	1	4	1
#14	1	1	4	3	2	1	3	1	3	2
#15	2	1	3	1	3	2	3	3	3	2
#16	4	3	4	3	3	2	4	3	3	2
#17	1	1	1	1	1	1	1	1	1	1
#18	1	1	1	1	1	1	2	1	2	2
#19	4	4	1	1	3	2	2	2	3	1
#20	1	1	2	2	4	3	4	3	4	4
#21	3	1	2	2	2	1	3	1	1	1
total	47	33	45	34	50	37	62	37	61	37
mean	2.24	1.57	2.14	1.62	2.38	1.76	2.95	1.76	2.9	1.76

Student	11pre	11pos	12pre	12pos	13pre	13pos	14pre	14pos	15pre	15pos
#1	4	2	4	4	4	2	3	2	4	2
#2	3	1	4	3	2	2	2	2	2	4
#3	2	1	4	4	1	1	2	1	2	1
#4	4	1	4	1	2	1	3	1	3	2
#5	3	1	4	1	1	1	3	1	3	1
#6	2	2	4	2	3	2	2	2	2	3
#7	2	1	4	3	2	1	2	1	2	1
#8	2	3	3	2	1	1	2	2	3	2
#9	3	1	1	1	1	1	2	1	3	1
#10	1	1	2	2	1	1	1	2	1	2
#11	2	2	3	4	2	1	4	2	3	3
#12	2	2	2	1	1	1	2	1	2	2
#13	2	1	3	1	1	1	1	1	1	1
#14	2	1	4	3	1	1	3	2	2	1
#15	3	1	4	2	3	1	2	1	2	1
#16	4	3	4	4	4	3	3	3	4	3
#17	1	1	1	1	1	1	1	1	1	1
#18	2	1	2	1	1	1	1	1	1	1
#19	2	2	4	4	2	1	2	1	2	1
#20	2	2	4	4	2	1	3	1	2	1
#21	2	2	4	2	2	1	2	1	3	2
total	50	32	69	50	38	26	46	30	48	36
mean	2.38	1.52	3.29	2.38	1.81	1.24	2.19	1.43	2.29	1.71

Student	16pre	16pos	17pre	17pos	18pre	18pos	19pre	19pos	20pre	20pos
#1	4	3	4	4	3	3	4	3	4	2
#2	3	3	4	1	4	4	2	1	1	1
#3	1	1	3	1	1	1	3	1	3	1
#4	2	1	2	1	2	1	1	1	2	2
#5	2	1	3	1	1	1	2	1	2	1
#6	3	3	2	1	2	2	2	2	1	1
#7	3	2	1	1	3	2	1	1	1	1
#8	3	2	1	2	2	1	2	1	1	1
#9	3	1	1	1	3	2	2	1	2	1
#10	1	2	1	1	2	2	1	1	2	1
#11	4	1	3	3	3	1	3	1	3	3
#12	2	2	1	1	2	1	2	1	3	1
#13	4	2	2	1	1	1	1	1	2	1
#14	3	1	3	1	2	2	3	1	3	1
#15	3	2	3	2	3	1	3	1	3	1
#16	4	3	3	1	3	1	3	2	3	2
#17	1	1	1	1	1	1	1	1	1	1
#18	1	1	2	1	1	1	1	1	2	1
#19	2	2	2	2	3	1	2	2	1	1
#20	1	2	1	1	3	2	3	2	3	1
#21	1	1	4	3	1	1	2	1	3	2
total	51	37	47	31	46	32	44	27	46	27
mean	2.43	1.76	2.24	1.48	2.19	1.52	2.1	1.29	2.19	1.29

Student	pre	post	change
#1	72	51	21
#2	58	42	16
#3	47	28	19
#4	51	27	24
#5	52	24	28
#6	48	37	11
#7	44	28	16
#8	47	35	12
#9	42	25	19
#10	32	32	0
#11	61	46	15
#12	37	27	10
#13	42	23	19
#14	53	29	24
#15	58	31	27
#16	68	50	18
#17	24	24	0
#18	29	23	6
#19	44	33	11
#20	52	41	11
#21	51	28	23
mean	48.2	32.6	15.7

Boys	pre	post	change	Girls	pre	post	change
#1	72	51	21	#5	52	24	28
#2	58	42	16	#6	48	37	11
#3	47	28	19	#7	44	28	16
#4	51	27	24	#8	47	35	12
#12	37	27	10	#9	44	25	19
#14	53	29	24	#10	32	32	0
#17	24	24	0	#11	61	46	15
#21	51	28	23	#13	42	23	19
mean	49.1	32	17.1	#15	58	31	27
				#16	68	50	18
				#18	29	23	6
				#19	44	33	11
				#20	52	41	11
				mean	47.8	32.9	14.8

Results of Pre and Post Test Anxiety Background Knowledge Survey

	Pre		Post	
	T	F	T	F
Q#1	2	19	21	0
Q#2	0	21	21	0
Q#3	5	16	21	0
Q#4	17	4	5	16
Q#5	9	11	20	1