ED 590 Capstone
Thinking and Problem Solving

Introduction

One of the most important skills for students to learn is to think critically and independently. In order to succeed in the future workplace, teachers and parents alike must reinforce these skills in order to prepare them for the 21st Century. Traditional forms of education are making way for teaching methods that promote active, independent and critical thinkers. As the world around us changes on a daily basis, "we must become active, daily, practitioners of critical thought." (Center for Critical Thinking B). Professional educators have the responsibility to teach students effective problem solving skills and encourage them into "making reasoned judgments." (Beyer). This capstone project has helped me become a more critical thinker by reflecting on my critical thinking and problem solving strategies as a teacher.

Importance of Critical Thinking and Problem Solving Skills

The Center for Critical Thinking summarizes that:

- Critical thinking is independent thinking, thinking for one self.
- Critical thinkers do not passively accept the beliefs of others.
- Independent thinkers strive to incorporate all known relevant knowledge and insight into their thought and behavior. (Center for Critical Thinking C)

In order to "survive" in the 21st Century workplace, individuals must possess these sets of skills. High Tech environments are fluid and never stationary. Directly teaching specific skill sets only provides a narrow and limited understanding of how to think critically. The dynamics of an evolving workplace demand that workers be flexible and have the skills necessary to create new learning strategies to complete the task at hand. Having the ability to continuously learn through the critical thought process will allow workers to adapt to ever changing career environments. Educators face the challenge of training students to think critically in the future workplace. "Critical thinking is an eminently practical goal and value." (Center for Critical Thinking B). By learning critical thinking and problem solving skills, one can apply those skills to everyday life. I believe as an educator my responsibility lies in teaching students to think for themselves. In order to be successful problem solvers, students need to be independent thinkers. A popular term today is "thinking outside the box." In our ever changing, high stress world, future citizens need to learn creative, critical thinking skills to be effective in the 21st Century workplace.

In addition to enhancing life work skills, social and team-building skills can also be learned through the critical thought process. Students working together to solve a problem helps them understand that each person has valuable input. Teachers can foster

that learning by providing a classroom environment that promotes teamwork and values all ideas without judging. I believe the entire school family can promote critical thinking and problem solving skills. From the school counselor working in small groups on conflict resolution to the librarian leading a book poster contest, we as educators must work together as well to model teamwork and creative thinking. I will now reflect on my own teaching strategies and curriculum that promote problem solving and critical thinking.

Applications and Strategies to Foster Critical Thinking

In my classroom, I am fortunate to have several tools available to promote critical thinking and productive problem solving. Last year, through a generous gift from a retired teacher (see my Students, Families and Communities capstone), our school was able to purchase 10 Vocational Technology workstations to be installed in the computer lab. Throughout the course of the curriculum, students have the opportunity to explore vocational-technology careers with hands on activities. Some of the workstations include Aeronautics, CNC, CAD, Hydraulics, and Alternative Energy. The content of each of the modules is different of course but the primary common theme is to have the student make their own inferences based on what they observe in lab tests. The study guides accompanying the modules keep the critical thinking theme consistent by asking open-ended questions that can be answered by completing experiments and drawing conclusions based on the perceived results. "Critical thinking is thinking that assesses itself." (Center for Critical Thinking A). At the end of the module, students are asked to reflect on what they learned and to critically review how they come to their conclusions and if there are any other ways or methods to come to the same (or different) conclusion.

Technology itself can be a vehicle to promote critical thinking as well. It creates a high-interest environment that students seem to gravitate to whenever possible. I believe that students tend to open their minds to newer ways of thought when they are excited and interested in technology. Recently, throughout the course of a Power Point assignment, students were "figuring out" new techniques to enhance their autobiographical presentations. When the lesson began, I instructed the students with "surface" training; how to start a slide show, how to insert a slide, etc. My goal was to give them some very basic information about how to use the program but let them explore and find the features required to complete their assignment. Furthermore, I had the students help each other out where needed. This promoted the notion of team building and problem solving in a direct and meaningful way.

"Problem solving is one of the most beneficial educational opportunities that we can offer students of any age." (Harris). Providing technical support to computer users can teach an individual to use creative problem solving skills. At our high school, several students are taking an independent studies class. Two of those students are very interested in technology and computers. For one period a day, they are responsible for troubleshooting and support of all the high school's computer systems. My role as the mentor is to provide support and guidance when they feel they need it. To help these students become

autonomous thinkers, I do not assign specific tasks for them to complete. I merely instructed them that they are responsible for keeping the computers up and running and questions from staff answered. Over the last two years, the students have grown technically and their self-esteem is at an all-time high. When this started, I was receiving several calls a week for help. Now, I get one or two per month. The students had to work together to find not only the solution to a particular problem but actively seek out potential problems and fix them before they became "real" problems. These two students represent the showpiece of critical thinking and problem solving in action.

Conclusion

Traditional forms of education are not providing today's students with the necessary skills to succeed in the 21st Century. As educators, it is our duty and responsibility to promote higher level thinking in order for students to think for themselves and to critically review ideas of others. We want to create "thinking" students that can come up with their own justifiable answers that may be different than the next student, but no less right or wrong. This depth of thinking will help our students become productive, thinking citizens of the future.

References

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