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Math 689
Assignment 10

Critical thinking is a very important learnable process that mathematics teachers in particular have the ability to relay to their students (Schafersman, 1991). Problem solving is a type of critical thinking skill; it can be taught and it can be learned. Here are the steps to guide students to learn problem solving:

1. Read the problem. If a picture can be drawn, do so. Identify what it is you are looking for. Attempt to categorize the problem at hand.
2. Assign variables.
3. Determine a strategy to solve the problem. Write equations that translate the English into Math.
4. Solve the equations by using an appropriate technique based on the type of equations.
5. Check your solution by rereading the problem and making sure the answer makes sense.

A common barrier to learning how to problem solve is fear. Remember that "critical thinking in the classroom is facilitated by a physical and intellectual environment that encourages a spirit of discovery." (Keefe and Walberg, 1992). Thus, students must be encouraged to participate in learning how to problem solve. This process of learning how to think is just that – a process, and it requires practice and time. So, the teacher must dedicate sufficient time and work to the process so that the students have time to have some measurable success at problem solving.

Some helpful tips to help guide students include giving the students plenty of room to explore. The students should be allowed to investigate alternative solution strategies without

undo repercussions. One of the ways this can be accomplished is through homework that breaks down steps for the student, so that the students come to understand that problem solving (and hence critical thinking) is a process, not a snap judgment (Potts, 1994). Also, allowing for more than one strategy on homework assignments and tests may help, as well as allowing students to rework homework and tests for credit (Keller, 1998).

Mathematics is not the only way through which a student has the opportunity to learn how to think. Reading and writing persuasively is also an excellent way to develop critical thinking skills. As mathematics instructors we can use our subject combined with the writing element to help our students. Encouraging students to express their ideas and strategies verbally and in writing can lay the groundwork for more extensive problem solving (Nite, 2007; Schafersman, 1991).

References:

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