

## **THE MATH PROFESSOR AND THE MATH TUTOR: A MARRIAGE MADE IN HEAVEN?**

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The roles of the tutor and professor are not always clearly defined in working with students in the sciences and mathematics. The nature of the material is such that it is not generally open to interpretation by student, tutor, or professor. Therefore, in introductory level college courses, the tutor and professor must work closely to define the expectations of the course, to investigate the problems the student is having, and to identify the areas in which the student is deficient.

As determined by many studies in the past, a student comes to a college level math course with many parameters affecting his/her achievement. If, as generally agreed, approximately 50 percent of student success is attributed to the basic mathematics skills the student brings to the course, and approximately 25 percent is attributed to the quality of instruction, that leaves only 25 percent which can really be altered by the tutor in a learning resources situation. This leaves little margin for error on the part of the tutor.

Not only must the tutor assess the background skills of each tutee, assess the study habits of each tutee, and establish a rapport in a very short period of time, the tutor must also be sufficiently effective during the first meeting to assure the student that his/her time is being "well spent." This seems like an almost insurmountable task which the tutor has to deal with and not the professor. The responsibilities of the professor vary greatly from institution to institution depending on the class size, the range of capabilities allowed in various courses, and the level of the course itself. There is a very real difference in teaching and tutoring a developmental class as opposed to an upper level class in both math and the

sciences. In addition, there is a very real difference in the level of enthusiasm for the subject depending on whether the class is one that is a general requirement or one that is elected by the student.

Tutor and professor are both in agreement that the role of tutoring cannot be a “quick fix” which is often sought by many students of math and science. It is so easy just to pop into the learning center and ask a tutor how to do just one example, thinking that having done the example solves the problem of understanding. As difficult as it is to get students to retain a link to the learning center, it is even more imperative in math and the sciences that the tutor make a supreme effort to have the student understand just how important a factor this is in success and mastery of the subject matter.

Many math tutors become “unglued” when a student says, “My professor insists that the problem be done his way.” This is certainly a stumbling block for both tutor and student. Of course, the optimal situation would be that the tutor is aware of the vagaries of every professor at the institution. Barring this possibility, the tutor must be prepared to at least qualify the process presented in light of the process presented and required by the professor. In fact, such an explanation generally solidifies the process and promotes understanding on the part of the student. The procedure becomes one that is understood rather than just memorized.

Even before tutors meet tutees, before learning center personnel open the doors and establish schedules, it is necessary to change the pervading attitude among math and science professors regarding tutors and the tutoring process. It is very important to establish a rapport with the professors that is based on trust, competence, and compassion. Interaction with the professors by learning center personnel is important to pave the way for large-scale

use of the center by math and science students. Many professors are set in their ways, believe that tutors “do the homework,” and fail to understand the fact that tutors play a very important role in the academic success of a student. Attention must be paid to “public relations” with the faculty.

In summary, here are a few suggestions for promoting maximum rewards in the form of academic success for students from presentation by professors and work with tutors.

1. The tutor should attempt to determine the weaknesses in the background of a student.
2. The tutor should put in place a method (schedule) for trying to improve basic skills of a student while realizing that he/she cannot remedy all shortcomings.
3. The tutor should stress understanding of concepts through repetition, have extra worksheets or texts available with additional problems of similar type, and not assume that doing the one problem from the assignment is sufficient.
4. The tutor should have the student verbalize the processes involved in solutions or problem solving. The ability to verbalize a process fosters understanding and promotes long-term memory.
5. The learning center director and his/her staff must improve public relations with all faculty members and promote the techniques and capabilities of the center. It is particularly important to interact with faculty from mathematics and the sciences.