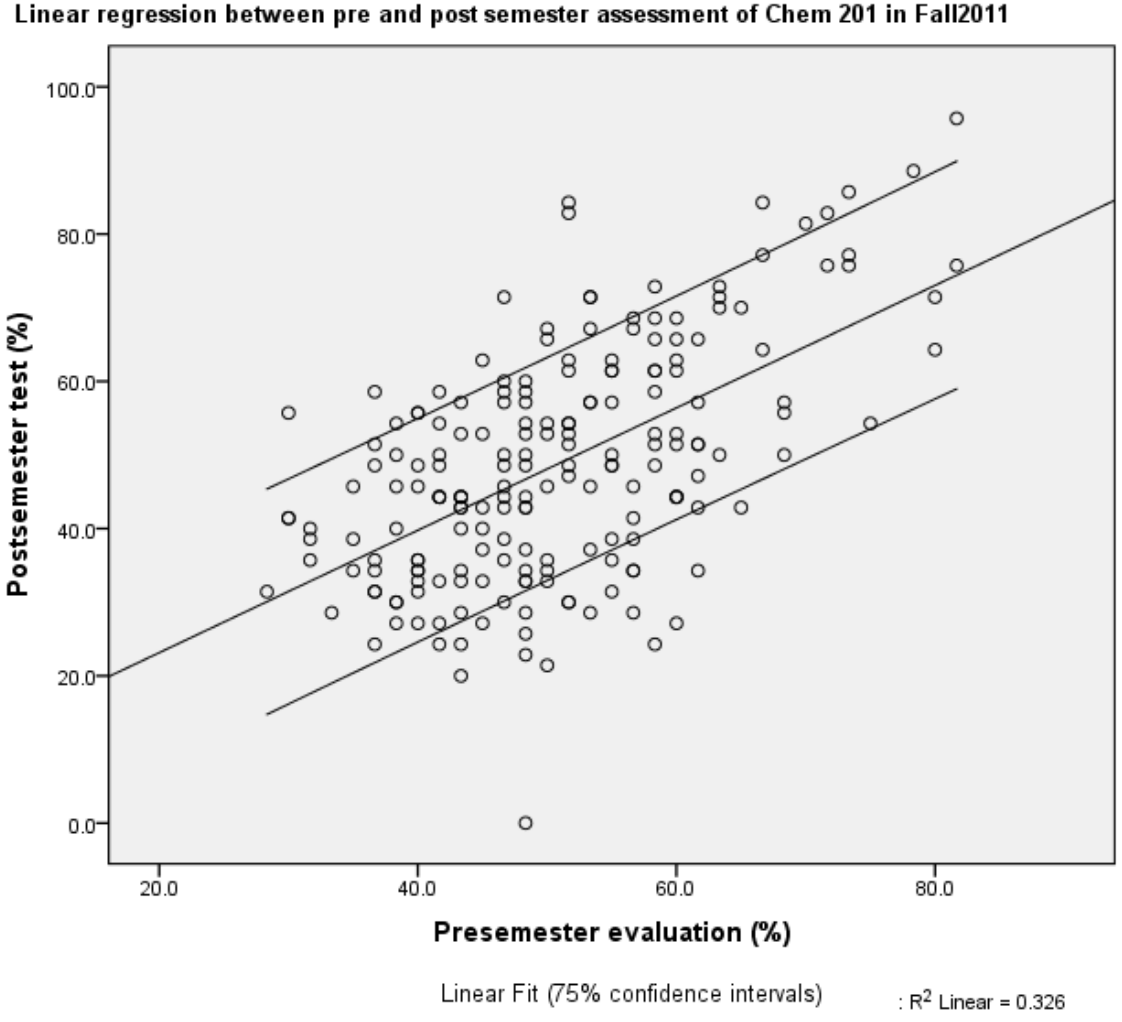
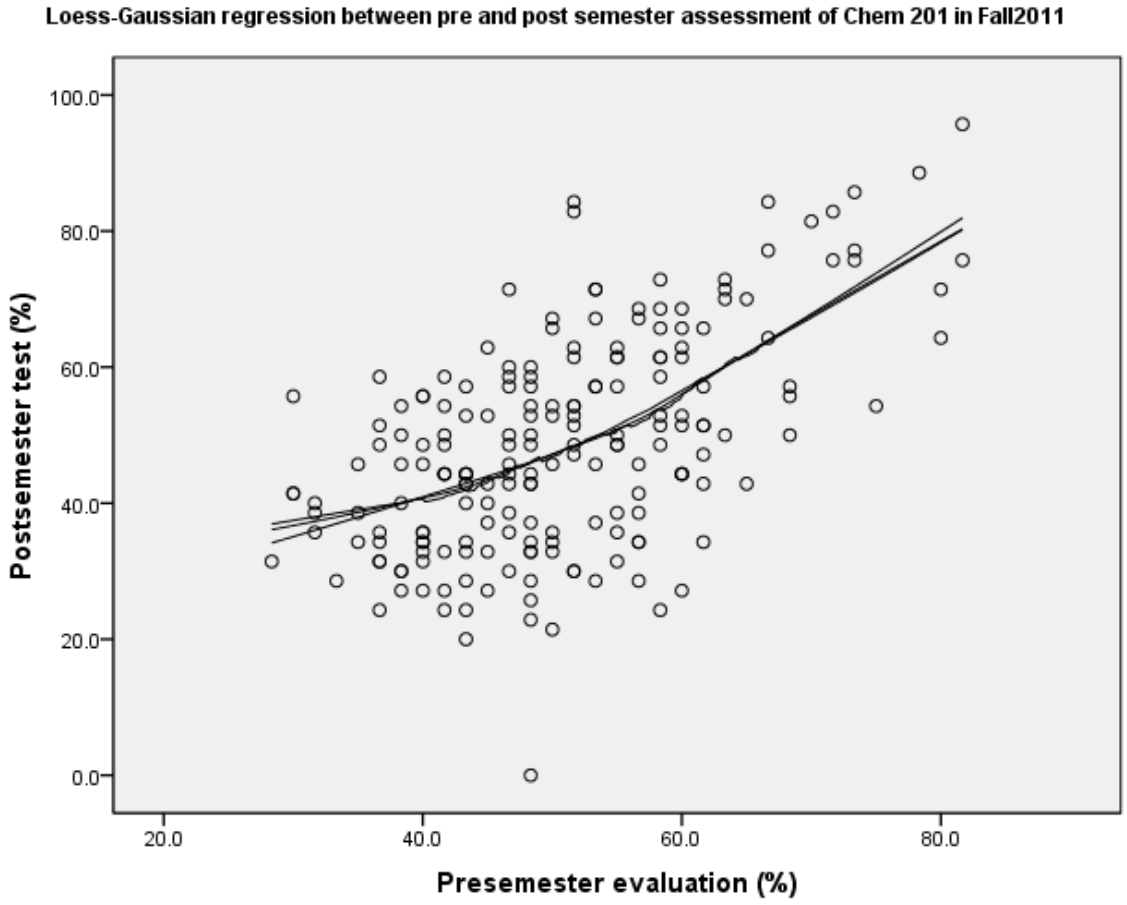
The PSD (Physical Sciences Department) has a long history of a formal monitoring of student learning outcomes. As the understanding and importance of the assessment evolved over the years so did the scope and depth of our efforts to grasp the task in the PSD. Since the beginning till just recently it was more or less analysis of the results of quizzes and exams including the summary of the final/exit test results. This kind of data analysis comprises so called Descriptive Statistics. Recently the PSD became interested in the factors that determine, or to say the least influence the level of success in the courses offered by the PSD. In other words an attempt of so called Difference Inferential Statistics was made.

The General Chemistry I, Chem 201 is the flagship course of the PSD with the enrollment of approximately 300 students in 9 sections. Like in any other course in the PSD Chem 201 administers a cumulative final/exit test at the end of each semester. However, for the last two regular semesters the assessment of the course was enriched with a pre-semester math and basic chemistry skills evaluation. The purpose of this analysis was to gauge the usefulness of the pre-assessment as an early warning system for students that might have difficulty succeeding in the course. One of the original plans was to offer such students tutoring from the Prepharmacy club. There was no success with this yet. Nonetheless, the following is a brief summary of a statistical analysis of the correlation between the pre and post semester assessment.

What is evident in this example is that there is a strong correlation.



Further, the Loess-Gaussian best fit shows that the higher the pretest result the better the correlation between the two. The data also suggests that the majority of students, who have an average preparedness level with low to medium (40-60%) score do not seem to be predetermined to the level of success they're going to experience in the course.



Loess-Gaussian Fit (50%, 75%, and 95%)

It seems natural to take the next step in this research and investigate the explanation to the inquiry ***why well prepared students achieve low success, and how the students who are poorly predisposed outrun the well prepared ones***?

Thus the future research plans are to find better answer to the old, classic and ever-important question ***how to improve the teaching-learning process***.

Prepared by M. Valentino and K. Ochwat