Evaluation Strategy

I chose the exponents unit not only because my students tend to struggle with the rules of exponents, but also because I have added a lengthy project to my curriculum with the hopes that my freshmen will gain a deeper understanding of the importance of exponents in real life applications. Because I feel that this unit is important, I evaluate their progress through a variety of means, including pre-assessment, formative and summative assessments, quizzes, board participation, group work, homework, journal of activities, and a Google presentation that summarizes their learning. This unit is split up into six sections. Multiple evaluation strategies are present at the beginning, middle, and end of each section.

Pre-Assessment

The students should already have some experience with exponents. This concept was introduced briefly in eighth grade. Therefore, at the beginning of the unit, I give the students a simple ten question test to see what they know and remember. This paper and pencil, fill in the blank test allows me to see which students have a strong background knowledge and which do not. The scores on this test are purely for my knowledge and are not recorded in the computer. The results help me to decide which topics I need to spend more time teaching.

Board Participation and Homework

At the beginning of each section, I give the students notes. I use the smartboard and present the rules of exponents as definitions that need to be copied word for word, and then I apply those rules through examples where I show and explain each step. At the end of my lecture, I assign 15-20 homework problems that the students begin in class. They are assigned a completion grade the next day for their efforts. At this time, I ask my students if they have questions on specific problems or if they need me to clarify any of the rules that I introduced the previous day. Once I feel the issues have been resolved, I call the students to the board to explain the five or so problems that I feel are the most important from the assigned set. The students receive a grade based on how well they explain their work to the class. I ask for volunteers at first, but the students know by the end of the week, they are all expected to have had some board time.

Quizzes

Once I feel that the students have reached a certain level of understanding of the lesson, they are expected to complete a ten to twenty question quiz. Each question is worth one point and they must show all the steps they used to arrive at the answer. Even if they used the calculator, they must show what buttons they pushed in order to receive full credit. If the scores are low, the next day, I spend some time re-teaching the lesson.

Group work

On certain sections, such as exponential growth and decay, the students are asked to work with a partner. They have a list of problems that I expect them to solve. I use this as a partner assessment grade. I feel that since we expect our students to collaborate with others, then we should assess them that way as well. There is an even number of questions, and even though the students are working together, they both still have their own paper to hand in to me. This ensures that they are both working.

Formative Assessment

After the first three lessons are taught, the students take a 15 question formative assessment. The assessment is graded, but the score is not recorded in the computer. This test consists of multiple choice, short answer, and extended response questions. The students must receive at least a 75% on the test. If they do not meet or exceed that score, they are expected to stay after school with me for additional help. The data from this test guides my instruction for the next phase of the unit. It allows me to see if more time should be spent on the basics, or if the class as a whole is ready to move on to the application phase. This has also become a mandatory part of my job. The results are shared amongst members of the math department and new ideas are presented in order to raise our students’ level of achievement in these areas.

Journal of Activities

This method of assessment allows me to see if the students have honestly developed a level of understanding the content. They are given problems that are already solved, but they are solved incorrectly. The students must find the error and explain how to fix it. At this stage, I am not looking for the right answer; I am checking their problem solving and analytical skills. Essentially, do they understand the process enough to locate a mistake and can they explain why the mistake happened. In this journal, the students are not solving problems, they are justifying their answers.

Presentation

At this stage, the students summarize all of the material they have learned throughout the unit and create a slide presentation. This presentation would be similar to the Smartboard notes that I provide them in class. Their goal is to develop a project that would allow them to be the teacher. It is in the form of a Web Quest. They conduct research outside of the textbook, solve problems with step by step instructions, compare and contrast exponential growth and decay, and develop problems that test the learning of others. This assessment does not only evaluate their learning of exponents, it also challenges their skills in the use of technology. They must understand the material enough to present it to the class, but they must also learn the mechanics of a software that is completely new to them.

Summative

This is the final step in the evaluation process. Once the unit is complete, the students will take a pencil and paper test. The test has 25 questions. It is comprised of multiple choice, short answer, and extended response questions, and is very similar to the format of the formative assessment. The questions call for various levels of thinking. They are asked to recall, apply, synthesize, evaluate, and analyze the material that was presented in the unit. The assessment is completed individually and is worth 100 points.