

Leveraging Teaching Time

When done properly, homework can double or triple the value of every instructional minute.

By Carol Gambill

Most students who enter my grade 8 algebra classes in September each year are ill-prepared to learn algebra because most of them have not fully mastered arithmetic.

To make matters worse, I have too few class periods to teach them the entire rigorous course when one adds up the drug education activities, annual class trips, report card day, vacations, snow days, exams, and parent-teacher conferences.

These restrictions demand that the students put in extensive quality time outside of class grappling with difficult problems and practising for accuracy.

I have devised a method that I have used for 15 years with all students, those with disabilities, the average student, and those who are gifted. This method really works. Students make incredible gains during their year with me, because of the system the kids long ago dubbed the Gambill Method. Here's how it works.

Twenty to thirty problems are assigned for homework every evening, ranging from the easiest to the most difficult of a given section of the text.

I always assign the odd problems because their answers are in the back of the book. The answers provide the students with road maps to mastery. If they don't get the correct answer, it means they turn back, take a detour, change a flat tire, or find a service station.

On the day that the assignment is given, I do the even problems with students in class using direct instruction. Although I use a traditional algebra textbook (Brown, Dolciani, and Sorgenfrey, 1994), I have developed totally scripted lessons for each algebra unit that require absolute focus and attention, constant oral responses, and intense involvement from every student.

Direct instruction assures that all students leave my classroom that day

with a thorough understanding and at least partial mastery of the concepts. I tell my students that doing homework does not mean merely writing out the problems, although that most assuredly is a component.

I tell them they must master completely every problem in the assignment from the easiest to the most difficult. I would never assign a problem for which I had not given them the answer.

The next day when the students walk in the door, I give them their daily quiz over the most difficult four or five problems from that assignment. Their answers and all of their work toward that end must be accurate.

Some students work more quickly than others; the first students finished come up and have their papers checked by me, then they become student checkers and grade recorders, and so it progresses, with more and more checkers becoming available as the slower students finish their daily quizzes.

Within 15 minutes, all students in the class have taken a daily quiz over the previous night's homework assignment. The quizzes have been graded and recorded and are back in the students' hands, thus providing daily immediate feedback to each student on his or her own progression toward mastery, and providing me with instant knowledge as to whether or not students did their homework.

I never ask to see the homework of any student unless that student has failed the daily quiz. If I ask to see the homework of a student who has failed and the student does not have it, he gets an immediate detention for the day.

A detention simply means that students must stay after school that day and do the assignment that they failed to do on their own. This, in my opinion, is a justifiable, logical consequence.

Because I am so strict with mastery of homework concepts, I assure the students that I will also do my part to help them be successful. Therefore, I conduct extra help sessions before school and at both lunch periods.

It is gratifying to see five to ten eighth-graders gathered around my chalkboard before school, excitedly discussing a difficult algebra problem. The kids love these chalkboard algebra debate sessions.

In addition, the students have my telephone number and are invited to call me as a last resort. Please note, however, that I seldom receive more than two calls per school year.

My students win so many academic awards that students from other algebra classes cannot even play in their league. They have repeatedly won a variety of mathematics competition championships at the local, state, and national levels for the past 10 years. My students took first place in the Pittsburgh MathCounts Competition for five consecutive years and won a Pennsylvania State MathCounts championship as well.

There is much hard work and yet the students love my class, vote it their favourite each year, love math (even those who had despised it up until algebra) and remember their year with me as the one that led them to discover within themselves the power to determine their own destiny in the academic arena.

All this is based on a simple system that nurtures and demands daily perfect mastery of each step in the course as it comes along. Other teachers who have adopted the Gambill Method have replicated my results.

(Excerpted with permission from Principal's Guide to Raising Math Achievement — see our review on page 3. Mrs. Gambill teaches in Littleton, Colorado.)