

Comparing On-Line Tutoring-Testing Programs for College Algebra

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Several college Algebra texts now come with online tutoring and testing programs. This is one instructor's attempt to compare four programs. This is not an endorsement of any product nor to imply that these are the only products on the market. These happen to be the products that the instructor is using at this time. The opinions are those of this instructor alone and are biased views based solely on what this instructor was able to find out about the product while using it. These products may indeed have other features of which the instructor was unaware.

The on-line products were selected because they accompany currently used texts and so that students could access the course material from anywhere over the WEB, and especially from their own computers. While all of on-line testing-tutorial products could be used in a campus lab setting, these were not used in that manner. Students were to use these products on their own time, not in a scheduled lab. Two products did require campus computer personnel to install plug-ins so that the program would work on campus computers, however. Three of the four products were used as a supplement to existing courses for practice or quizzing and the fourth was used in a distance-learning environment. The product that was used for distance learning could not be used in campus labs because it required a custom install on the local computer.

Each of these on-line products has a common WEB site where all participants enter, except for eGrade. The eGrade program has a personalized web site for the instructor's individual class, which is set up by the publisher. The on-line tutorial/testing programs used and evaluated were:

- **eGrade**, to accompany *Explorations in College Algebra*, John Wiley and Sons. Personal WEB page: <http://egrade2.brownstone.net/pilot2/classes/bmichaelalgebra2/>, is used for on-line quiz taking and practice. Students need a PIN code for access and the instructor's URL WEB site. Quizzes are presented for each textbook section. You can create your own tests from the test bank. It is required use with 150 students
- **Mathpro5** to accompany *College Algebra and Trigonometry, Graphing and Data Analysis*, Prentice Hall. <http://www.mathpro5.com>. Used for on-line quiz taking and tutorial. It comes with a CD, which requires loading plug-ins. Students need a PIN access code and the instructor's course identification number. Each chapter section has tutorial exercises, and section quizzes, also chapter tests are presented. Video examples are available. It is required use with 300 students
- **MathXL**, to accompany *Precalculus*, Addison Wesley. <http://www.mathxl.com>. Used as a tutorial supplement and for practice quiz taking. Students need a PIN code for access. The program requires certain plug-ins to be downloaded, before it can be used. Each chapter section has tutorial exercises, there are chapter tests available. You can also create your own chapter tests from a test bank. It is used as a supplement, not required.
- **The Learning Equation (TLE)** *Elementary Algebra*, by Brookscole, <http://bca.brookscole.com>. Used as a distance-learning course. Students buy a workbook with CD's. A minimum install is required and CD's are necessary to run the tutorials. Each section presents an animated tutorial lesson with sound. Students progress through an introduction, tutorial, examples, practice problems and self-check. The instructor, from a large test bank, creates chapter tests. Required use by 30 students

Following is a comparison of the products based upon criterion decided by the instructor. All of the products supply technical support for instructors in the form of: telephone consultation, email, and training either via the WEB or in person by a consultant. Students can get technical support by phone or email. It is recommended that instructors pilot these products with small sections at first, because students deluge the instructor with emails regarding questions/complaints about the program. You must get students used to contacting technical support. Programs that require little or no installation are easiest on the student.

★★★★ Excellent ★★★ Good ★★ Adequate ★ Poor NA Not Available

	eGrade	Mathpro5	MathXL	The Learning Equation (TLE)
Set up requirements for instructor (student)	★★★★ Contact publisher for website and password. Fast. (Purchase PIN, get WEB URL from instructor)	★★★ Instructor PIN, Need plug-ins from CD or WEB, must create course. (Purchase PIN and CD, install plug-ins, need course code)	★★★ Instructor PIN, plug-ins from the WEB, set up course. (PIN accompanies the text, install plug-ins from WEB)	★★★ Instructor PIN. Must set up course. (Purchase workbook with PIN and CD, need course code, need to custom install from CD to local computer.)
Ease in setting up syllabus	★★★ Preloaded, can deselect sections. Objectives (topics) not stated.	★★★★ Preloaded, can deselect sections and objectives.	★★★ Preloaded, can not deselect sections in study plan, must add homework sections	★★★ Syllabus is blank, must build it.
Quality of tutorial questions	NA	★★ 1/2 Mostly fill-in blank and multiple choice . Slow, too much scrolling, very particular about form of answer, not stable.	★★★ Mostly fill-in blank and multiple choice. Graphs are small.	★★★★ Varied formats, student chooses starting place from Introduction, Tutorial, Examples, Practice and Self-check..
Student feedback options during tutorial	NA	★★★★ 1/2 View Example Step by step View solution Video Example Check answer, however too much scrolling.	★★★★ Confirm answer Guided solution Sample problem Retry	★★★★ Sample solution Answer Try again New problem
Videos	NA	★★★★ Real person at board solving the problem, can be streamed over the WEB.	NA Will be available with My Math Lab	★★★★ Computer generated with sound, need CD.
on-line quizzing features	★★★★ Fast, multiple formats, multiple inputs, i.e. 6 or 2*3, accepts answers in CAS or tools palette format. Smart, tells if answer is in wrong form. Shows answers at end of test.	★★ 1/2 Fill in blank or multiple choice, needs tools palette for answers. Has many settings for test. Decreases student score when they retry problem. Allows student to see complete solution and answer, immediately, (a good idea) Not always stable.	★★★ Fill in blank or multiple choice,. needs tools palette for answers. Very picky about answers, 2.50 not 5/2 or vice versa, answers must be exact. Shows correct answers at end of test.	★★★ Multiple format for questions, needs tools palette for answers. Shows answers at end of test. Students can review test and print it out at any time after taking the test.
gradebook	★★★★ Fast, updates immediately, can see multiple forms of statistics, multiple filters, can export.	★ Slow, updates at night, cannot export currently.	★★ Not enough filters or useful information. Can export.	★★★ Shows detailed time- on-task, several filters, printing is slow, can export.

Each program has some wonderful features and each can contribute to the students knowledge if they spend the time with it. This instructor's experience is that students will not use the program, however, if it is not required to do so. Students want to feel that the time spent with the program will indeed count toward their grade in some manner. Some students resent taking tests on-line, because they make typing errors which cause them to get the problem wrong, or they enter the answer in the wrong format and the problem is actually right, but marked wrong.

Below is a summary of the best and worst features of each of the programs.

	eGrade	Mathpro5	MathXL	The Learning Equation (TLE)
The Best Features	<ul style="list-style-type: none"> • Fast • Multiple forms of test questions • Accepts answers in different forms • Gradebook is fast and has many filters • Can select quiz questions • Intuitive to use. 	<ul style="list-style-type: none"> • Videos • Can set filters on exercises and tests • Allows students to check answers immediately • Shows solution as well as answer to both exercises and tests. • Email communication 	<ul style="list-style-type: none"> • Each problem presented in one screen, no scrolling needed. • Students can see solution as well as answer • Can use preloaded tests or create your own. • Included in the cost of a new text. • Students can practice with any text. 	<ul style="list-style-type: none"> • Has actual tutor talking. • Multiple formats where students can choose where to begin (Introduction, tutorial, examples, practice, self-check) • Test bank has multiple formats and shows actual test questions in a list format, not just name.
Worst features	<ul style="list-style-type: none"> • Not a tutorial. • Does not show solution to tests, only answers. 	<ul style="list-style-type: none"> • Slow • Gradebook not always available • Requires a lot of scrolling • Cannot select questions on either exercises or test. 	<ul style="list-style-type: none"> • No control of problems in the exercises. • Answers must be in precise format, does not recognize equivalence values. • Gradebook does not have enough filters. • Graphs are very small and hard to read. 	<ul style="list-style-type: none"> • Not enough instruction in the workbook. • Students need to spend a great deal of time with the program.

We are entering the beginning stages of tutoring and testing programs. With each passing year, the programs will get better. I predict that on-line testing will take the place of hand grading homework and quizzes. Students will be scheduled to a lab, as part of the course, to work on the tutorial. Lecture time may be decreased as students do more work at a distance. Many remedial courses will be taught on-line and students will complete the course at their own pace.

If this instructor could create the perfect on-line tutoring-testing program it would have:

- The speed and ability to accept multiple forms of answers of eGrade.
- The control of filters for exercises and test of Math pro5.
- Presentation of problems in one frame of MathXL.
- Ability to show step-by-step solutions of Mathpro5 and MathXL.
- Multiple tutorial format of TLE.
- Ease of using test bank of TLE.
- The gradebook of eGrade.