DEVELOPING PRAIRIE TO MOUNTAIN EXPLORER: A GIS AND REMOTE SENSING DATA SET FOR THE FIFTH-TWELFTH GRADE CLASSROOM
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Results of a three-year collaborative investigation into what constitutes viable GIS data sets for use with fifth through twelfth grade students will be reported and the product Prairie to Mountain Explorer (PTME) will be demonstrated. This collaboration involved teachers, teacher educators and scientists participating in a NASA funded five-state consortium (Upper Midwest Aerospace Consortium-UMAC). PTME is a spatial data base which provides a rich context for student investigations using the Internet, Geographical Information Systems (GIS), Global Positioning Systems (GPS), and Calculator Based Laboratories with sensing instrumentation (CBL). PTME contains selected base-line data sets at regional and county scales (ranging from 1:2,000,000 to 1:100,000), and a user’s guide with meta-data for over 300 themes. Results from extensive pilot testing coupled with input from agriculture/natural resource researchers contributed to this powerful educational resource. UMAC maintains a web-site to support PTME and to provide a growing resource of classroom tested lesson plans (nasc.uwyo.edu/edparc).

MODELLING THREE-DIMENSIONAL SURFACES ON A SPREADSHEET
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This paper describes how three-dimensional surfaces can be drawn using an electronic spreadsheet. This program is useful and an inexpensive way for both teachers and students to visualize 3D surfaces from almost any angle and interval. This when blend and together with theory will be a promising approach for them to get a firmer understanding of the subject.

QUANTITATIVE COURSES IN DISTANCE LEARNING
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In distance learning through Internet, where the Universitat Oberta de Catalunya (UOC) is one of the pioneers in the world, the particular type of students attending the courses and the difficulties in the transmission of mathematical texts create the necessity of developing new strategies which facilitate the learning–training process. These strategies are based on the development of ad-hoc learning guides that establish a particular link between self-directed learning and directed learning. We focus our study on a particular type of courses: quantitative courses, i.e., courses that use mathematical language for its development or courses where mathematical concepts are the aim of study. The design of appropriate learning guides for quantitative courses and their classification are the main objectives of this paper. In this sense, from different educative experiences in low, medium and high level courses in mathematics, this work proposes different items that a learning guide has to contain and it also gives a classification criteria of such these guides.

DISCOVERING XYALGEBRA: INTELLIGENT INTERACTIVE INTERNET INSTRUCTION
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Passive activities such as watching presentations, listening to explanations of general principles and watching experts solve sample problems are helpful, but peripheral, to the mathematical learning process. For students the indispensable step is solving problems for themselves. Yet most commercial mathematics software still concentrates on presentations and sample problems, while sending students off line to do practice problems on paper without interactive support. Answers are either multiple choice or limited to a single simplified final step. Early Internet courses are even less interactive. In contrast, students using xyAlgebra can enter each step of each problem solution. They enjoy intelligent support at every step as xyAlgebra’s suggested solution strategy changes in response to their steps in simplifying expressions, solving equations and even in setting up and solving verbal problems. The next version of xyAlgebra will support instruction over the Internet, yet the entire package can be downloaded without cost at math0.sci.ccny.cuny.edu/xyalgebra.