Designing Web-Based Modules to Assist Teachers with Teaching Mathematics to Minority Students

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Abstract

Many teachers are faced with the dilemma of how to effectively bridge the gap in teaching minority students. Specifically, teachers are burdened with the content area of mathematics and communicating its concepts effectively.

A number of factors attribute to why minority students may have difficulty learning mathematic concepts. One factor would be that minority students might process information differently from their counterparts. Minority students tend to be concrete cognitive learners and thinkers, where they typically recall information, as opposed to the more analytical/linear learner and thinker, who has a greater ability to problem-solve. Another factor would be the absence of a technological presence either in the classroom and/or at home. The latter is a concern that has been addressed as a part of educational reform.

The design of a web-based mathematics module was developed to address the needs of teachers, and to bridge the gap with minority students and the learning of mathematical concepts. The module was developed to aid teachers in approaching the teaching of math to minority students in an uncommon way. Mathematic concepts focused upon the standards established by the National Council of Teachers of Mathematics. However, the instruction within each module was different from the standard way of teaching mathematics. Each mathematic concept focused upon integrating previously learned concepts such as addition, subtraction, multiplication, and division with new ways of approaching problem-solving skills. The web-based module allowed the learner to approach learning math concepts at his or her own pace. Also, the modules contained feedback during instruction, remedial instruction, and embedded testing to allow the learner to see where their problem areas exist. The teacher was also an integral part of the process. The goal of the web-based module was to aid in the teacher’s classroom delivery of mathematics instruction. Further, the goal of the web-based module was to improve instruction, and change the way that minority students process information. The module was established to aid in smaller classes, where students can interact more closely with teachers, enhance learning, for the benefit of increased time on task. Also, the development of learning activities that takes less time...
to master, and recontextualization, which often results in rapid learning, and allows more time for mastery of additional material.

The following recommendations were made after piloting the web-based mathematics module. The first recommendation was to update the module to effectively reach students who use English as a second language. The second recommendation was to duplicate the module for use with the National Science Standards. The third and final recommendation was to introduce the module to in-service and pre-service teachers to further bridge the gap with instruction for minority students.