# A Framework for Developing Effective Concurrent Web-Based Engineering and Technology Curriculum for Rural High Schools

**Richard Cozzens**
*Department of Engineering and Technology*
*Southern Utah University*

## Abstract

Rural high schools have traditionally lacked access to the most up-to-date engineering and technology curriculum and teaching resources. Recently, the use of communication technology has allowed improved access to learning resources where they would otherwise not be available. With relatively standard technology and limited travel requirements, recent developments have enabled changes to curriculum delivery that should not only provide materials but significantly improve the learning experience. However, a framework that specifically addresses the needs for developing effective concurrent engineering and technology for rural high schools does not exist. Southern Utah University Department of Engineering and Technology developed a framework and tested it in a pilot program. A concurrent engineering and technology curriculum was developed using the framework. The curriculum was then delivered to concurrent high school students using three different curriculum delivery methods. The first delivery method was the traditional face-to-face classroom setting. The second curriculum delivery method was a hybrid format. The third method was purely online.

There were two main objectives to the pilot program. The first was to evaluate the course and verify that it was effective. The instruments used to determine the effectiveness of the course was; Pre Couse Survey, Pretest and Posttest, Rubric for Assessing Interactive Qualities (RIAQ) Rubric and Final Grade. RIAQ Rubric was reviewed from five different perspectives; students in the class, students external to the class, instructors, instructional designers and administrators. The second objective was to use the lessons learned from this research to evaluate and improve the framework.

The significance of this research would provide a proven framework for developing not only Quality Matters (QM) approved curriculum but also a framework for applying the curriculum in such a way as to maximize the web-based learning opportunities for students in rural high schools.

**Keywords**: Web-based, curriculum, online, quality, effective, rural, engineering, technology, high school, secondary education