
The 21st Century of Technology Education

As we move into the future we need to step back and see where the world is going. Business and industry are making major changes and the expansion of technology is changing the way we think and how we do things. Even the way we learn is different today; students are not the same as they were 20 years ago. With all the changes in the world it would only make sense that we should look at the way we teach and make changes needed to be successful in the future. Technology education is no exception to all the change happening today. We must meet the future needs of our students and provide them with the skills needed to be successful in the ever changing world. We must be proactive and move into the 21st century of technology education.

Many educators do see this need and are beginning to make changes now. When you read the research presented in this Volume 48-1 of JSTE, you will see the great work that is being done to move technology into the 21st century.

In This Issue

We start off Volume 48-1 with two *At Issue* articles. The first is written by Marin Petkov and George Rogers, titled *Using Gaming to Motivate today's Technology Students*. In this article the authors state that technology is becoming a big part of American life and today's students are geared toward this new way of learning. Education in American schools needs to change with the times and adapt to this new way of

learning, giving up the more traditional lectures and going with what helps today's students learn best. The authors talk about using gaming as a method that motivates students and increases their learning. Gaming is a great tool to increase students learning and today's video games are being designed to do just that.

The second *At Issue* article, *The Gary Plan: A Model for Today's Education*, written by Kevin J. Kaluf and George Rogers, deals with education reform. Many technology education programs are being reduced or eliminated due to budget cuts. With these cuts the question becomes, who will teach students the skills necessary to be productive citizens and keep this country at the top industrially and economically? Many people have attempted to answer this question over the years. One plan identified by the authors does a detailed job of presenting answers to the problem. The Gary Plan of "work-study-play" developed by William Wirt presents an innovative way to implement and encourage hands on activities that provide problem solving and career-related skills. The authors then go on to tell how the plan evolved and many of the problems that had to be overcome before it was successful.

After these first two *At Issue* articles about improving technical education and providing skilled workers, we have a manuscript written by Thomas Wilkin and Godfrey Nwoke dealing with recruiting career and technical education (CTE) teachers to help overcome the shortage of skilled workers in this country. To do this, the authors conducted a three part study, CTE trends in education; status of CTE education in the New York City Public Schools and the highly successful program "Success Via Apprenticeship (SVA) program; and to establish recommendations for the future. Successful SVA programs can and do have a major impact on CTE education recruiting, and retaining qualified teachers is the first step. The authors also suggested a cooperative effort between industry

and education to address the cost of CTE programs. In the end, a concentrated effort from state to state must be conducted to find future CTE students. In an effort to find students to fill technical education classes we need to insure that we match the right student to the right program. The next manuscript in this volume deals with this question while placing students in an engineering program. Raymond Dixon wrote about this in his manuscript titled *Selected Core Thinking Skills and Cognitive Strategy of an Expert and Novice Engineer*. The author addresses topics ranging from how students learn engineering and design concepts to the most effective methods of preparing pre-service teachers. The main purpose of the study was to analyze and explore the thinking skills of a student as compared to those of an expert engineer and to see how these skills influence their overall cognitive strategy as they solve a common engineering design problem.

Nolan Fahrer, Jeremy Ernst, Theodore Branoff and Aaron Clark conducted their research to investigate the differences between performance and cognitive assessment scores in a 3-D modeling unit of an engineering drafting course curriculum. Their manuscript titled *Performance and Cognitive Assessment in 3-D Modeling* consisted of testing 92 high school students enrolled in Drafting II-Engineering classes. Although the results of their study showed that there was no significant difference between performance and cognitive assessment, the authors did feel that it was necessary to develop and implement more performance-based assessments in Career & Technical Education that require students to exhibit both skills and knowledge.

The STEM Initiative: Constraints and Challenges, authored by Dennis Herschbach talks about the implications of STEM programming that will aid the engineering, vocational, technical, and technology education classes. In this manuscript the author talks about the considerable national interest in

STEM initiatives and how it represents a way to think about curriculum changes. While the STEM initiative requires an integrated curriculum design, it moves away from the more traditional method of teaching by separate subjects. The application of each pattern is examined in reference to how knowledge is taught and used. The author ends his manuscript by providing insight on how shifting from the traditional methods of teaching separate subjects to the STEM initiative will expose students not only to the way that formal knowledge is learned but also to ways that it is applied.

We finish off Volume 48-1 with an Under Review article by David Bjorkquist. David wrote a review of a book titled *There is Power in a Union: The Epic Story of Labor in America* by Phillip Dray. This is an excellent book detailing the history and development of labor unions in the United States. It begins with the first textile mills in Lowell, Massachusetts through our present day and further. The book identifies individuals and events that shaped labor in this country.

As can be seen by reading these outstanding articles and manuscripts in volume 48-1 of JSTEM we are moving technology education into the 21st century and beyond, and it should be an exciting time.