A K-12 Engineering Pipeline Model Based Upon *Standards for Technological Literacy*

Kendall N. Starkweather
International Technology Education Association

This presentation is based upon work completed in the United States in which the technology and engineering education communities worked together on a National Science Foundation and National Aeronautics and Space Administration funded project to create *Standards for Technological Literacy*. The Standards document was created to outline what students should know and be able to do as it relates to technological literacy. Standards were created for the following grade levels: K-2, 3-5, 6-8, and 9-12. The work passed a formal review by the National Academy of Engineering and the National Research Council of The Academies. These standards are now available in the English, Chinese, Japanese, and Finnish languages.

Work has been completed on additional standards pertaining to professional development, assessment, and programs for K-12 teachers and administrators. Companion addenda have been published to serve as guides for educators desiring to create curricula based upon the standards.

Additional development is underway to create standards based curriculum for grades K-12 based upon engineering concepts that involve hands-on student experiences. The aim of this education is to build courses based upon mathematics, science, and technology standards that reflect what engineers do as designers, builders, and thinkers who are creating our human-made world. Secondary students of the future will be involved in courses such as Exploring Engineering, Engineering & Design, Invention & Innovation, Technological Systems, and more. These courses will be designed for students of all ability levels and are currently being implemented in selected localities. Activities that have been implemented at the elementary/primary level have been integrated into the normal school curriculum. Assessments for this work will be ongoing.

The presentation will be concluded with discussion about the opportunities that now exist to create strong K-12 initiatives reflecting the concepts used by the engineering community. The engineering community, for the first time, has identified standards, content, teaching and learning curriculum, and a significant thrust that has the capability to start learning at the very earliest levels and continue all the way to the university engineering program.

Presenter: Dr. Kendall N. Starkweather is the Executive Director/CEO of the International Technology Education Association located in Reston, Virginia, USA. Dr. Starkweather can be reached by email at kns@iteaconnect.org or by phone at 703-860-4738.