**FAQs: *Standards for Technological Literacy* Revision Project**

**April 2, 2019**

Q1: **What is the overall rationale and mission for the revision project?**

R: When published nearly two decades ago, *Standards for Technological Literacy (STL)* established content guidelines and benchmarks for learning across the K-12 spectrum. However, the technologically designed world and the knowledge required to be productive in it continue to evolve. A number of the specific examples provided in the document have become obsolete, and the dated quality of some of the material in the *STL* threatens to lead educators to abandon this framework. The ITEEA and the Council on Technology and Engineering Teacher Education (CTETE) are working together on this needed revision by bringing together 40 educators for a working conference in August 2019 to create an updated standards document*.* Work surrounding this conference will be divided into three parts: pre-conference preparations, including critical information gathering to inform the revision process; the central activity, the conference that will bring together the writing and review team for revision of the *STL*; and post-conference activities focused on dissemination of the revised standards. Funding to support the August 2019 conference has been sought from the National Science Foundation.

Q2: **What is the scope of the revision?**

R: The universals of technology have changed since *Standards for Technological Literacy (STL)* was published in 2000. The updated *Rationale and Structure* document (2006) and relevant literature published since *STL* was released will be used for a moderate update. This update may include combining, adding, or reducing standards and benchmarks or may include adding new content such as crosscutting concepts to mirror the practices of contemporary standards developed for other disciplines.

Q3: **Will there be a new *Rationale and Structure* document? If not, what is the basis for this revision (i.e. research, reports, literature)?**

R: No there will not be a new *Rationale and Structure* document. The revision will be based on an extensive literature review, including three theme issues of *Technology and Engineering Teacher*; the results of the *STL* survey conducted in Fall 2018; input from the membership at the 2019 ITEEA Conference in Kansas City; reviews of related content standards; and other material.

Q4: **Will *STL* be renamed?**

R: Changing the name depends on several factors. Based on survey results, 73% of respondents (*n =* 978) indicated that they feel engineering should be included in the title of the new standards document. The eight leadership team members and 30 reviewers will discuss and come to consensus based on these survey results and on subsequent discussion and input.

Q5: **Will the same eight chapter and 20-standard structure remain?**

R: The short answer is “maybe.” There could, however, be changes to the number of standards and benchmarks. Such changes will be determined based on the survey results, literature review, and discussion between leadership and review team members and other stakeholders, as well as on members’ feedback on the revised draft document.

Q6: **What is the timeline for the project?**

R: Currently, the goal is to accomplish revisions and publish an Executive Summary by December 2019. We hope to formally present the revision results at the 2020 ITEEA Conference in Baltimore, MD.

Q7: **What is the organizational structure detailing the project director, leadership committee, writers, and reviewers?**

R: Thomas Loveland from University of Maryland Eastern Shore is the project PI. Steve Barbato, Executive Director of ITEEA, and Marie Hoepfl, Past President of the CTETE, are co-PIs. The eight-member Leadership team was identified as part of the conference grant proposal and consists of the following individuals:

1. Dr. Thomas Loveland, Director of the Career and Technology Education Graduate Studies program, University of Maryland Eastern Shore (representing CTETE Executive Board).
2. *Dr. Yvonne Spicer, President of ITEEA 2018-2019 and formerly Vice President for Advocacy and Educational Partnerships at the Museum of Science, Boston (representing the ITEEA Executive Board*).
3. Dr. Todd Kelley, Associate Professor in Technology Leadership and Innovation, Purdue University.
4. Dr. Michael Daugherty, Professor of STEM Education and Director of Innovative Career Education, University of Arkansas.
5. Dr. Charlotte Holter, classroom teacher and President of the ITEEA Elementary STEM Council.
6. Dr. Marie Hoepfl, Professor and Graduate Program Director, Appalachian State University; Past-President of the CTETE.
7. Dr. Johnny Moye, ITEEA Senior Fellow.
8. Dr. Jennifer Buelin, Director of the ITEEA STEM Center for Teaching and Learning; lead writer for *Engineering byDesign* curriculum.

A 30-member Review Team will be assembled based on the modified Delphi method used during the selection of the historic “Jackson’s Mill” team in the 1970s. The *STL* Leadership Team was asked in February 2019 to identify and rank order their top five nominations for the review team. The Leadership Team met at the 2019 ITEEA conference to select the first 16 reviewers from among these 40 nominees. After that, the sixteen selected reviewers will be contacted and asked to provide two new nominations each. In mid-April, 2019, the Leadership Team will meet via video teleconference to consider the second set of nominees to reach agreement on the final 14 reviewers. Based on input from the NSF, we seek the following demographic and professional breakdown for membership on the Review Team:

* Five classroom teachers, representing elementary, middle, and high school levels (17%).
* Two district or state supervisors (6%).
* Three representatives from allied professional organizations (ASEE, NSTA, NCTM) (10%).
* Fourteen four-year college faculty representing various areas of related content-area expertise (47%).
* Three two-year college faculty representing schools that offer technology and engineering pre-service teacher preparation via articulation agreements and/or representing key areas of related content-area expertise (10%).
* Three industry representatives (10%). Target industries include information technology, renewable energy technology, and manufacturing/robotics.

When this selection process is complete, reviewers and leaders will be sent contracts and the travel arrangements will be booked through ITEEA. Leading up to the August meeting in Florida, documents and resources will be shared with Review Team members to consider. The Leadership Team is responsible for coordinating and overseeing the Review Team work on specific standards, revision of the first two chapters of *STL,* and writing of the new Executive Summary.

A draft of the team’s work will be circulated to the ITEEA membership for comment during Fall 2019. Final edits to the document will be made by members of the Leadership Team prior to its planned final publication in March 2020.

Q8: **Is there a process for resolving conflict?**

R: The Leadership Team will serve as mentors to the Review Team and as points of contact. Following input from the entire team, as well as from the public comment period, the Leadership Team will final decisions concerning any disputes.

Q9: **Is there a plan for cross-checking work?**

R: There is much work to be accomplished and much to cross-check. The basic plan has been laid out and will progress as identified in the Project Timeline section of the NSF Grant Request. The Leadership Team and Review Team have their specific responsibilities. In effort to cross-check each responsibility and product, members of the Leadership Team will do two things. First, they will become familiar with the entire process and desired product (revised *STL*). Secondly, at the close of the August conference, they will oversee a review process during which individual reviewers will cross-check the work of other reviewers. For example, elementary teachers will be responsible to checking the K-2 and 3-5 benchmarks for all standards. Leadership Team members will confer with one another during the cross-checking process. Review Team members may be called upon to provide input and suggestions following the August meeting. Specifics will be discussed during and following the 2019 ITEEA conference. Members of the Leadership Team will serve as the final cross-checkers and evaluators.

Q10: **With CTETE taking the lead, has a plan for committee engagement/work been established? How will other Councils and ITEEA committees be involved?**

R: During the 2019 ITEEA Conference Dr. Loveland presented an *STL* revision update during the ITEEA Governance Session. ITEEA Affiliate Council Presidents have been encouraged to attend the session, which will also include all members of the ITEEA committees and working groups. During the CTETE Business Meeting, Loveland provided a brief update on the project. A mechanism will be developed on the ITEEA website for soliciting comments about the overall project and for each current and proposed standard.

Note that the Leadership Team and the Review Team will, by design, include members from all of these affiliated groups. There will also be multiple opportunities for individuals from across the ITEEA membership to provide input on the revised *STL.*

Q11: **Who are the strategic partners for this project?**

Steve Barbato has been in communication with the following executive directors of affiliated organizations. He will be in continued contact with them about our goals and process of revising the *STL*.

* David Evans, National Science Teachers Association (NSTA)
* Ken Krehbiel , National Council of Teachers of Mathematics (NCTM)
* Norman Fortenberry, American Society for Engineering Education (ASEE)
* Richard Culatta, International Society for Technology in Education (ISTE)
* Rosanne White, Technology Student Association (TSA)

Q12: **Does revision mean STL would no longer be endorsed by the National Academy of Engineering?**

Soliciting input and receiving endorsement from the National Research Council, the National Academy of Engineering, and other professional organizations is currently being discussed.

Q13: **Is there a plan for communicating with key organizations that do not contribute directly to the project (i.e. U.S. DOE, Congress)?**

R: The Leadership Team will discuss this. The higher priority right now is obtaining NSF funding and preparing for the summer workshop.

Q14: **Have we discussed the revision with vendors and publishers with regard to content or financial support?**

R: Vendors and curriculum developers will have the same opportunity to learn about the *STL* Revision project and contribute ideas towards it at the 2019 ITEEA conference, as well as during the comment phase in Fall 2019. They can contact PI Loveland for updates at any time. ITEEA will be hosting a web site devoted to disseminating information and documents about the project. There will also be articles and information in ITEEA publications over the next year.

Q15: **How was the Fall 2018 ITEEA survey developed?**

R: The need for a survey of ITEEA members was discussed in the summer 2018 by the CTETE Executive Board. Dr. Loveland developed a first draft of the survey designed to distinguish between the perspectives of classroom teachers, supervisors and post-secondary educators. Some of the content questions were based on a review of published manuscripts in special theme issues of the *Technology and Engineering Teacher* over the last two years. When the leadership of ITEEA became involved with the CTETE project, a working group of leaders edited and worked on the survey over a period of two months. In September 2018, a pilot group of eight each classroom teachers, eight professors and eight supervisors took the survey. Results from that pilot group led to additional changes. An ITEEA IT professional worked on the electronic survey so the data would be accessible in a usable way for researchers.

Q16: **What did the survey reveal to the STL Revision effort and how is this information being disseminated?**

The survey was sent to 60,000 ITEEA members and stakeholders. Fourteen hundred and forty-three (1,443) people responded of which 13.4% of current ITEEA members responded. The survey provided over 24,000 data responses which included comments. A preliminary study of the data was conducted by Dr. Loveland with assistance from ITEEA. An article was written and accepted for peer review publication in the May / June 2019 electronic *Technology and Engineering Teacher* (eTET). A PPT was developed to be shared at the ITEEA conference during the Governance Session. The individual comments have been collated by standard and will be made available for ITEEA members in a binder to review and add their additional comments. Finally, a two sheet summary was prepared and will be distributed at ITEEA in Kansas City.