The Status of Technology Education in the United States
A Triennial Report of the Findings from the States

By William E. Dugger, Jr., DTE

The increase in the number of states that include technology education in the state framework may indicate that, as a nation, we are placing increasing importance on technology education as part of the overall learning experience.

The International Technology Education Association (ITEA) conducted research on the status of technology education in the United States in 2006-07. This was the third study conducted by ITEA on the condition of the study of technology in all 50 states. The previous studies were completed by ITEA’s Technology for All Americans Project in 2000-01 and 2003-04. The reports of the previous two studies were published in The Technology Teacher (ITEA, 2001), (ITEA, 2004).

Survey Methodology
Questionnaires were sent via email in October, 2006 to all 50 state technology education supervisors. In cases where no supervisor was available, alternate contacts in the state education departments were used. Two additional follow-up surveys were emailed in January and March 2007 to those states that did not return their responses. Telephone follow-up calls were conducted in April and May 2007 to attempt to gather unreported data from those states that had not responded and to clarify responses as necessary.

ITEA utilized the services of Zoomerang, an online web-based firm, to provide the respondents a questionnaire to complete on their computer screen and return electronically. The survey consisted of 10 questions. Questions 1, 2, and 4 were duplicated from the Newberry 2000-2001 study (a total of three questions) and questions 5 and 6 were added in the 2004 survey (a total of five questions). Questions 3 and 7 through 10 were added to the 2006-07 instrument. The specific questions were:

1. Is technology education in your state framework? (Yes or No)
2. Is technology education required in your state? (Yes or No)
3. If you answered Yes to question #2, is it:
   __ Under local control
   __ An elective
   __ A requirement that is pending/proposed
   __ At what grade level? _______________________
4. How many technology education teachers are in your state? ________________
5. Have you used Standards for Technological Literacy: Content for the Study of Technology (STL) in any of the following ways? (Select all that apply.)
   __ Not used at all
   __ Placed in your state standards
   __ Adopted “as is” for your state standards
   __ Used in your curriculum guides
   __ Conducted workshops using the standards
   __ Other, please specify ________________________
6. Have you used Advancing Excellence in Technological Literacy: Student Assessment, Professional Development,
and Program Standards (AETL) in any of the following ways? (Select all that apply.)

- Not used at all
- Placed in your state standards
- Adopted “as is” for your state standards
- Used in your curriculum guides
- Conducted workshops using the standards
- Other, please specify ___________________

7. Are you doing Standards for Technological Literacy assessments in your state at this time? (Yes or No) (If Yes, please share how used). _________________

8. What course title(s) best describe the secondary school level technology education curriculum being taught in your state? __________________________

9. Do you have a technology education state curriculum guide(s)? (Yes or No)

10. What best describes where technology education program funding comes from in your state (i.e., relationships to local, state, national programs)? _________________

The data tables that follow this report are abbreviated. (See Figures 1-9 and Tables 1A and 1B. The full data tables with comments are viewable online at www.iteawww.org/TAA/ResourcesMainPage.htm.)

Who Responded

Forty-six (46) states responded to the 2006-07 survey, which represents a 92 percent response rate. The states that did not respond were: Montana, New Mexico, Wisconsin, and Wyoming.

**Question 1: Technology Education in State Frameworks**

In 2006-07, the data indicate that 40 states (87%) include technology education in their state framework. This is an increase of two states from 2004 and an increase of 10 states (57.7%) over what states reported in the study done by Newberry in 2001 (See Figure 1).

In 2007, six states (13%) reported that technology education was not included in their state education framework. Four states did not respond to this question.

**Question 2: Technology Education Being Required in States**

In the 2006-07 survey, the same question from the ITEA/TIAAP 2004 study was used: “Is technology education required in your state?” There were 12 states (26% of those reporting) that responded “Yes” to this question. This is similar to the results from the 2004 study in which 12 states (23.1%) reported that technology education was required. Both the 2007 and 2004 data were slightly lower than the 14 states (27%) that were reported in 2001. See Figure 2 for a comparison of data from these three surveys.

The probable reason why there were very few “No” responses shown in the 2004 data is that most states reported technology education as an elective. Another reason could be that the requirement for technology education could be a local school district decision rather than a state one.

![Figure 1. Summary of 2001, 2004, and 2007 responses to, “Is technology education in your state framework?”](https://example.com/figure1.png)
**Question 3: Further elaboration on Question 2**

In the 2006-07 status survey, ITEA wished to find out more details to Question 2. Question 3 was created to do this and stated "If a state answered ‘Yes’ to Question 2, it is:

- Under local control
- An elective
- A requirement that is pending/proposed
- At what grade level? ____________”

Results from the 2006-07 survey showed, from the limited data being reported, four states (24% of those reporting) said that requiring technology education was under local school district control. Five states (29%) reported technology education as an elective. Only two states (12%) answered that technology education is being proposed as an elective and that this action is pending.

When asked at what grade level technology education is required, there were 13 responses. One state reported that technology education was required at the elementary through middle school levels. Five other states responded that it was required at the middle school level only, while four other states indicated that technology education was required for graduation at the high school level.

**Question 4: Number of Technology Teachers in States**

Question 4 was “How many technology teachers are in your state at the secondary (MS and HS school) level?” Several states indicated that the data they submitted about the number of technology education teachers was an approximation. The number of teachers reported by 40 states (86.9% of those reporting) in 2006-07 was 25,258 teachers. This number is much lower than was reported in 2004 and 2001. This number is partly attributable to the fewer number of states that provided data. A graphic comparison of the 2006-07 data is given in Figure 3, and state-by-state data is found in Table 1A, which can be accessed online at www.iteaconnect.org/TAA/StatusofTechnologyDataTables.pdf.

In 2003, Hassan Ndahi, DTE and John Ritz, DTE reported on follow-up research conducted by Old Dominion University based on the study conducted by Shirley Weston in 1997. The Weston research focused on technology teacher demand. The Weston figures for 1997 estimated that there were 37,968 technology teachers who were employed in the United States, with one state unreported. Ndahi and Ritz reported that there were 36,261 teachers employed in 2001. This is different from the results from the 2000-01 academic year findings of Newberry, which reported 38,537 technology teachers. Potentially this inconsistency is due to the sources used: the Weston and Old Dominion studies used state supervisors and state boards of education for their figures, while the Newberry study reportedly made use of alternative sources. In any case, the 2004 study, which relied upon state supervisors and state boards of education similar to the methods used in the Weston and Old Dominion studies, indicated 35,909 technology education teachers with one state unreported. This 2006-07 study relied on data reported by state supervisors of technology education.
Question 5: Utilization of ITEA’s Standards for Technological Literacy: Content for the Study of Technology (STL) in States

Question 5 stated “Have you used Standards for Technological Literacy, Content for the Study of Technology (STL) in any of the following ways? (Select all answers that apply).”

In response to Question 5, there were 42 states (91.3% of those reporting) in 2006-07 that reported using STL either at the state or local school district level. Two states (4.3%) stated that they did not use STL; two states reported they were not sure whether they used it or not; and four states did not report. In 2004, 41 states (78.8%) reported using STL, with two states reporting “unknown.” This compares very favorably to the Ndahi and Ritz 2003 findings that 43 states (83%) were using STL. Both the 2004 survey and the Ndahi and Ritz survey showed that seven states (13.5%) were not using STL. Averaging these data indicates that STL is used by over four out of every five states across the nation.

Refer to Figure 5 for a description of how STL was used in states.

Only one state (2%) reported that STL was not used at all. There were 14 states (30%) that said that STL was placed in their state standards. When asked if STL was adopted “as is” for their state standards, 11 states (24%) reported that it was. There were 22 states (48%) that reported that STL was used in their state curriculum guides. When asked if they conducted workshops using STL, 18 states (39%) answered that they had.

State supervisors were also asked other ways that STL was used in their states. There were 13 responses (28%) provided, and STL was used primarily as a resource or reference and as a guideline for technology and engineering.

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* Data from Ndahi & Ritz report in 2003.

Figure 4. Summary of this 2007 study, the 2004 ITEA-TfAAP study, and the 2003 Ndahi and Ritz Report on the usage of national technological literacy standards in the United States.
Question 6: Utilization of Advancing Excellence in Technology Education: Student Assessment, Professional Development, and Program Standards (AETL) in States

State supervisors were asked in Question 6: “Have you used Advancing Excellence in Technology Education: Student Assessment, Professional Development, and Program Standards (AETL) in any of the following ways? (Select all answers that apply.)”

As one may expect, Advancing Excellence in Technology Education: Student Assessment, Professional Development, and Program Standards (AETL) shows less usage than STL. In response to Question 6, AETL was reported as being used in 29 (63% of those reporting) of the states. Only 13 states (28.3%) of those reporting have not used AETL yet. The difference between STL and AETL usage is not unexpected, considering that AETL had been published four years prior to the time that this survey was conducted. Refer to Figure 4 to see how AETL was used in 2004 and 2007.

Refer to Figure 6, which provides some of the ways that AETL may be used in states. Eleven states (25% of those reporting) said that they did not use AETL at all. Five states (11%) reported that they were using AETL in their state standards. Three states (7%) stated that AETL was adopted “as is” in their state standards. Eight states (18%) reported that AETL was used in their state curriculum guides, while nine other states (20%) said that they had conducted workshops for teachers on AETL.

When asked what other ways AETL was being used, 15 (34%) of the state supervisors stated that it was used as a reference or resource and as a document to provide guidance to local school districts.

Question 7: Assessments Based on STL in States

Question 7 asked “Are you doing Standards for Technological Literacy (STL) assessments in your states at this time?” The responses are presented in Figure 7.

Seven states (15% of those reporting) stated that they were doing STL assessments in their state at this time. There were 39 states (85%) that reported they were not doing STL assessments in their state currently.
State supervisors were asked to provide elaborations to their responses on assessments, which were:

- We have code that indicates all non-standardized tested areas by standards have to be assessed at the local level and results available for public inspection.
- We test technology/engineering at Grades 5, 8, and high school.
- Assessment is done at the high school level when students complete a sequence of 3-4 courses in a career pathway “Technology/Pre-Engineering.”
- By April 2008, concentrator exams will be developed.
- Assessments are done at the individual school level.
- Some schools use STL assessments.
- This supervisor was concerned about this and needs ITEA’s help on what to do in the future.
- Using Aims test.
- No statewide assessments of TE. Local school districts are working to develop their own assessments.
- Voluntary assessments.
- We are working on this now.

**Question 8: Descriptions of Secondary School Level Technology Education Curriculum in States**

When asked, “What course titles best describe the secondary school technology education curriculum taught in your state?”, state supervisors provided a wide variety of answers. Many stated that the local school districts have the responsibility to provide course titles. The most frequent response was “technology education.” Some states reported that they used the ITEA/CATTS course titles at the middle and high schools. See Table 1B and the state “notes section” after Table 1B for some state-by-state course titles.

**Question 9: State Curriculum Guides in Technology Education**

Question 9 was “Do you have a technology education state curriculum guide(s)?” The responses provided are given in Figure 8.

Twenty-seven states (59% of those reporting) answered that they had technology education curriculum guides. There were 19 states (41%) that reported they did not have any curriculum guides for technology education.

**Question 10: Sources of Technology Education Funding in States**

ITEA wished to determine the source(s) of funding for technology education programs in states. Question 10 was “What best describes where technology education program funding comes from in your state (i.e., relationships to local, state, and national programs)?”

All of the 46 state supervisors (100%) who responded provided input to this question (four states did not respond). The largest response provided, by a great majority, was that states receive a combination of local, state, and federal (Perkins) funds for their technology education programs (20 states or 43.5% reported this). (See Figure 9.) Eight states (17.4%) reported that they used local funds solely for funding technology education programs. There were
seven additional states (15.2%) that reported using state and federal funds for technology education programs. Four states (8.7%) use local and state funds, while four other states (8.7%) reported using only federal dollars to fund technology education programs. There were two states (4.3%) that reported using state funds only for technology education programs. Finally, there was one state (2.2%) that used local and federal dollars to fund its technology education programs.

Conclusions:

It was disappointing that all states did not respond to the 2006-07 ITEA Status Study. Even with 46 states (92%) reporting, some questions were skipped or not fully answered.

The increase in the number of states that include technology education in the state framework may indicate that, as a nation, we are placing increasing importance on technology education as part of the overall learning experience. This trend is likely instigated by research on the increasing need for a technologically literate populace. (ITEA, 1996; ITEA, 2006; ITEA, 2000/2002; ITEA, 2003, ITEA, 2004; ITEA, 2005, ITEA, 2006; NAE & NRC, 2002; and the two ITEA Gallup Polls: Rose and Dugger, 2002 and Rose, Dugger, Gallup, and Starkweather, 2004).

As was stated in the 2004 article on this ITEA research, requiring technology education is another issue. The same number of states (12 in 2004 and 12 in 2007) require technology education (either at the state level or the local level). This is somewhat disappointing since ITEA has a vision that the study of technology is important and vital for all students. The bottom line is that technology education is still an elective in most states.

The number of technology teachers in the U.S. reported in this 2007 study was 25,258. This number was based on input from 40 states. In the 2004 study, 49 states provided data that there were 35,909 teachers. Naturally, with the data missing from 10 states in 2007, the number of technology education teachers was much lower than what was reported earlier. An unofficial estimate of teachers, based on the data provided by the states that reported in 2004, indicates that probably we may have had approximately 30,500 technology teachers in the U.S. in 2006-2007. Again, it was very disappointing that 10 states could not or would not provide a more accurate count of the number of technology teachers in their state.

STL is being used by a majority (over 91%) of states as a model for developing state technology education standards. Additionally, 11 states reported that they had adopted STL “as is” for their state technology education standards. It is positive news that 22 states used STL in their curriculum guides for technology education, and 18 states reported that they had conducted workshops on STL. Only one supervisor reported that STL was not being used at all in her/his state.

AETL is not being used as widely as STL at the state level. There were 29 states (63%) that reported using AETL in 2007. STL was published in 2000 (and reprinted in 2002) and AETL was published in 2003. Only 13 states reported that they were not using AETL at all in their state.

Assessing technological literacy based on STL is only being done by seven states. There were 39 states reporting...

Developing a new video series on curriculum. (See References.) Additionally, ITEA has developed standards-based technology education programs, and four “Addenda” for the ITEA standards on assessing in the implementation of technology education. (2000/2002).


Another replication of this research needs to be done in 2009-10.

This 2006-07 survey data and the implications of that data reinforce the need for continued dissemination and implementation of STL and AETL, with an emphasis on professional development and outreach efforts. There are now valuable new tools available to help the states in the implementation of STL and AETL. These are the four “Addenda” for the ITEA standards on assessing students, professional development of teachers, structuring standards-based technology education programs, and developing standards-based technology education curriculum. (See References.) Additionally, ITEA has developed a new video series on STL, AETL, and the Addenda, available at www.iteaconnect.org.

References


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Complete data tables may be accessed at: www.iteaconnect.org/TAA/StatusofTechnologyDataTables.pdf

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**Ad Index**

Autodesk.................................................C-4
CNC Mastercam......................................C-2
Geico...................................................C-3
Goodheart-Willcox Publisher.................38
Kelvin Electronics.................................31
PTC.....................................................ii
Toshiba..................................................37
Valley City State University...............12
White Box Robotics Inc.....................36

21 • THE TECHNOLOGY TEACHER • September 2007