

The Status of Technology Education in the United States

A Triennial Report of the Findings from the States

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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/TfAAP 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.

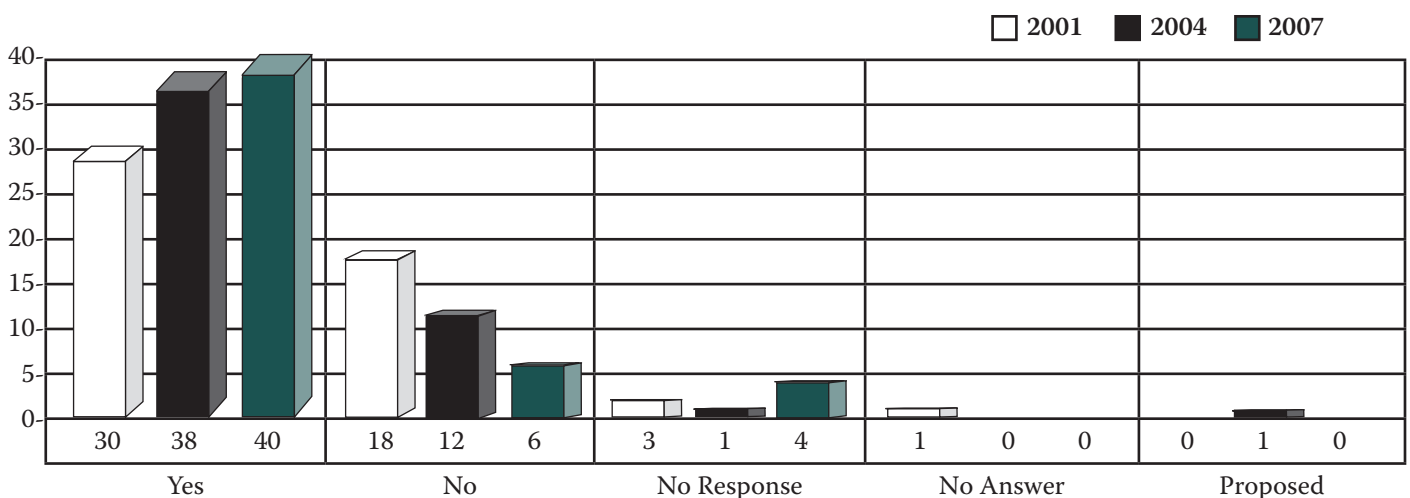


Figure 1. Summary of 2001, 2004, and 2007 responses to, "Is technology education in your state framework?"

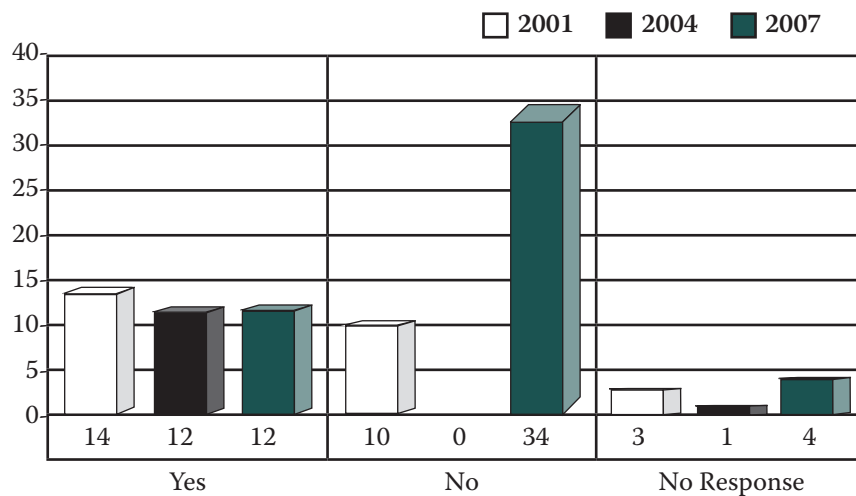


Figure 2. Summary of 2001, 2004, and 2007 responses to, “Is technology education required in your state?”

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.

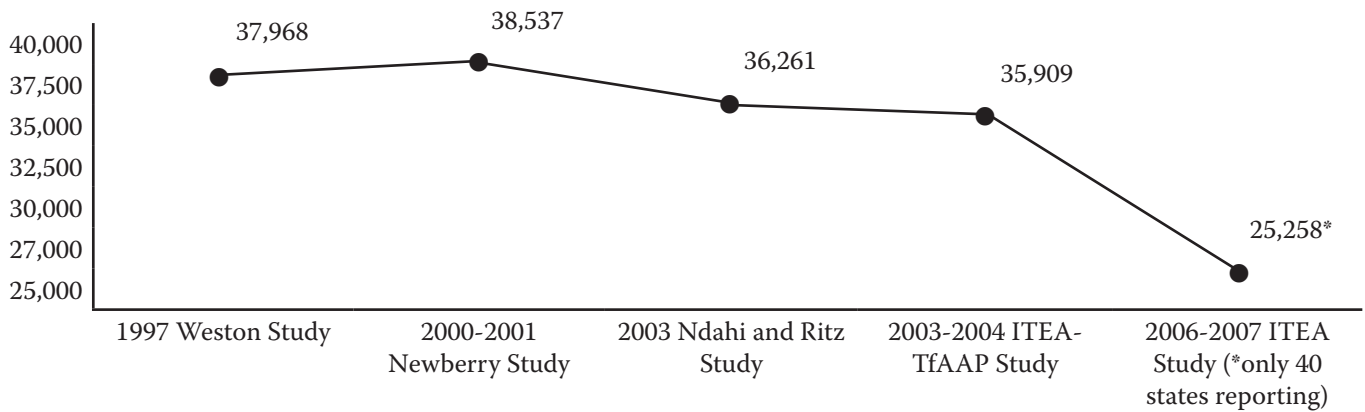


Figure 3. Summary of 1997 Weston study, 2001 Newberry study, 2003 Ndahi and Ritz study, 2004 ITEA-TfAAP study, and the ITEA 2006-2007 study on the number of technology education teachers in the United States.

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.

	STL Used? 2004	STL Used? 2003*	STL Used? 2007	AETL Used? 2004	AETL Used? 2007
Yes	41	43	42	22	29
No	7	7	2	23	13
Unknown	2	0	2	5	2
No Response	1	0	4	1	4
No Answer	1	0	0	1	2

* 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.

5. Have you used *Standards for Technological Literacy: Content for the Study of Technology* in any of the following ways?

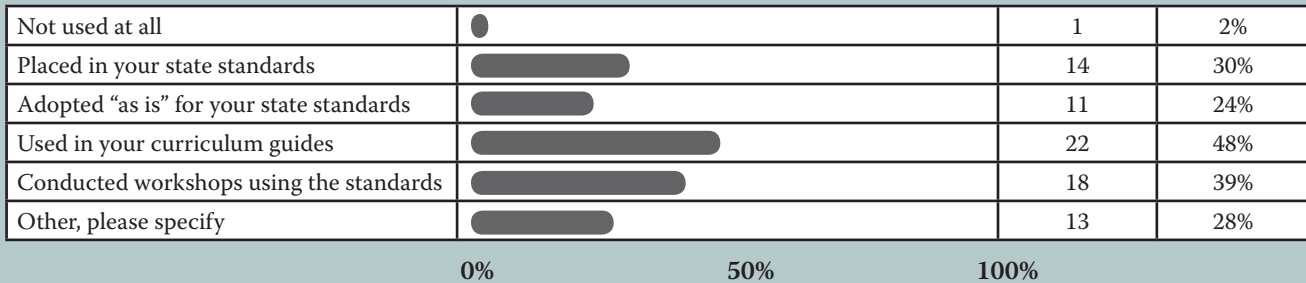


Figure 5. Responses from state supervisors on Question #5.

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.

6. Have you used *Advancing Excellence in Technological Literacy: Student Assessment, Professional Development, and Program Standards (AETL)* in any of the following ways?

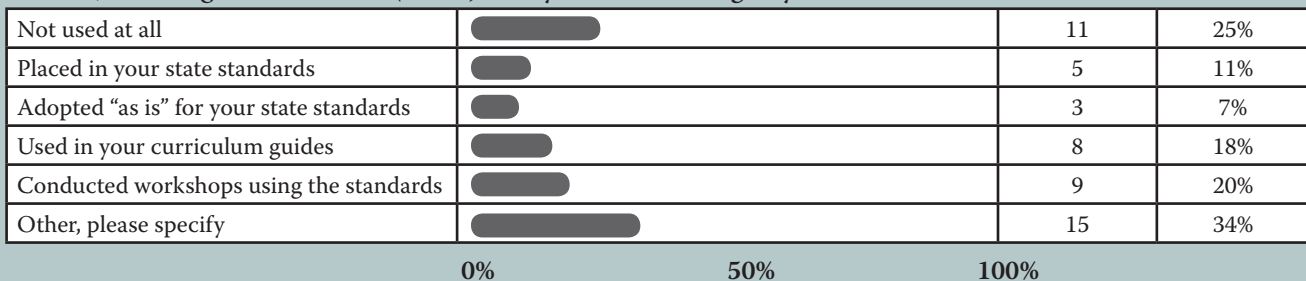


Figure 6. Responses from state supervisors on Question #6.

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

Technology Education Funding Sources	#	%
Local (only)	8	17.4 %
Local and State	4	8.7 %
Local and Federal	1	2.2 %
State (only)	2	4.3 %
State and Federal	7	15.2 %
Federal (only)	4	8.7 %
Local, State, and Federal	20	43.5 %
TOTAL	46	100 %

Figure 9. Sources of funding for technology education programs in states.

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

that they were not doing standards-based assessments at this time. Several states said that they were working on assessments currently.

There were a myriad of responses on course titles for technology education curriculum at the secondary school level. The most frequent “umbrella” name given was “technology education.”

Twenty-seven states reported that they have technology education curriculum guides. There were 19 states that said they did not have curriculum guides.

Regarding sources of funding for technology education programs in states, 20 states out of the 46 reporting stated that they use a combination of funding from the local, state, and federal (Perkins) levels. The next most frequent listing (by eight states) was the use of local (only) funding. Additionally, two other states use state (only) funding for their technology education programs. The other sources of funding are presented in Figure 9.

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. 🌐

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

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