

# Educational Technology in Teacher Education Programs for Initial Licensure

Statistical Analysis Report





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# Educational Technology in Teacher Education Programs for Initial Licensure

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December 2007

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# Introduction

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This report presents findings from a 2006 national survey of all Title IV degree-granting 4-year postsecondary institutions on how teacher candidates within teacher education programs for initial licensure are being prepared to use educational technology once they enter the field. Over the past two decades, considerable federal investment has been devoted to equipping the nation's K–12 schools with technology (Culp, Honey, and Mandinach 2005). Yet, despite the near universality of computers, Internet access, and other forms of technology within the nation's schools (Wells and Lewis 2006), many teachers feel ill-prepared to employ these tools effectively in their instruction (Lewis et al. 1999).

Research from the 1998 National Survey on Information Technology in Education pointed to significant shortcomings within schools, departments, and colleges of education with respect to the preparation of teacher candidates to use educational technology, citing lack of sufficient training among faculty and insufficient practice in using technology during field experiences, among other findings (Moursund and Bielefeldt 1999). Continuing challenges to the integration of technology in teacher education programs include availability and access to equipment, funding limitations, training, and instructional and technical support (Duhaney 2001).

While the need for teachers prepared to integrate technology into their teaching has been voiced by federal agencies, national professional organizations, and teacher education accreditation agencies for over a decade (Cunningham and Moses Stewart 2003), current statistics were lacking on the extent to which teacher education programs offer such preparation. The 2006 “Educational Technology in Teacher Education Programs for Initial Licensure” survey, requested by the Office of Educational Technology (OET) in the U.S. Department of Education and conducted by the National Center for Education Statistics (NCES), was designed to address this void. Findings from the survey are presented in this report.

## Methods and Data

The “Educational Technology in Teacher Education Programs for Initial Licensure” survey was designed to provide policymakers, researchers, educators, and administrators with timely information on the following topics:

- The educational technology-related topics and practices taught within teacher education programs for initial licensure (e.g., using Internet resources and communication tools for instruction, creating or using digital portfolios, using technology to access or manipulate data to guide instruction);
- The extent to which teacher candidates are taught to use technology tools for a variety of purposes (e.g., enhancing or enriching classroom instruction, assessing individual student progress, designing instructional interventions);
- The extent to which teacher candidates are able to practice what they learn during their field experiences, and the extent to which this opportunity is impeded by a variety of barriers within classrooms (e.g., availability of technology infrastructure, willingness of supervising teachers to integrate technology, competing priorities in the classrooms); and
- The perceived program outcomes for graduates of programs for initial licensure (e.g., the ability to construct project-based learning lessons, recognize when students with special needs may benefit from adaptive/assistive technology, integrate technology into instruction).

The development of the questionnaire involved review of the literature on educational technology in teacher education programs, identification of relevant existing questionnaires on the topic, crafting of new questions or adapting existing ones to address key issues in the field, consultations with experts, and multiple rounds of testing and instrument revision.

The study was conducted through the NCES Postsecondary Education Quick Information System (PEQIS). PEQIS is designed to administer brief, issue-oriented surveys with minimal burden on respondents and within a relatively short period of time. Questionnaires for the survey were mailed in May 2006 to all of the 2,512 Title IV degree-granting 4-year postsecondary institutions in the 50 states and the District of Columbia. The 2,512 eligible institutions were selected from the 2004 Integrated Postsecondary Education Data System (IPEDS), “Institutional Characteristics” survey (IPEDS-IC).

The final response rate was 95 percent. Data were weighted to yield national estimates. However, because the study was based on a census of all eligible 4-year institutions (rather than a sample), weighting only involved nonresponse adjustments for the 5 percent of institutions that did not respond to the survey. Detailed information about the survey methodology is provided in appendix A, and the questionnaire can be found in appendix B.

The front page of the survey included a definition of teacher education programs for initial licensure and instructions for completing the survey (see appendix B). The survey questions focused on

the characteristics of teacher education programs *for initial licensure*, regardless of whether the programs were at the undergraduate or graduate level. Teacher education programs *not* for initial licensure were excluded from the scope of the survey. Respondents were given the option of completing the survey online.

The purpose of this report is to present national estimates relating to the inclusion of educational technology in teacher education programs for initial licensure within the nation's 4-year postsecondary institutions. In addition to the national estimates, selected survey results are examined with respect to the following institutional characteristics (defined in greater detail in appendix A):

- Institutional control (public, private not-for-profit, private for-profit);
- Institutional size (less than 3,000 students, 3,000 to 9,999, 10,000 or more); and
- Types of teacher education programs for initial licensure (elementary and secondary education programs, elementary but no secondary education programs, secondary but no elementary education programs, and other program types but no elementary or secondary education programs).

Specific statements of comparison presented in this report have not been tested for statistical significance (e.g., through t-tests), since the reported statistics are based on a census rather than on a sample. Since response rates were so high, after making adjustments for nonresponse, the observed statistics were expected to be close to the values that would have been obtained if all institutions had responded. Comparisons of institutions of different control types, sizes, and program types are highlighted in the report where the differences between estimates are large (about 10 or more percentage points) or where the differences are smaller but follow meaningful patterns (e.g., where estimates for public institutions are consistently higher than estimates for private not-for-profit institutions across a range of items, even though the differences are only between 5 to 10 percentage points in each case).

While findings for private for-profit institutions are provided in tables in the report, they are not discussed in the text (except with respect to table 1), due to the very small number that had teacher education programs for initial licensure (36 institutions). Similarly, findings for the small number of institutions that had other programs types but no elementary or secondary education programs (39 institutions) are presented in tables but are not discussed in the text (except with respect to table 1). Throughout this report, institutional size categories will be referred to as small (less than 3,000 students), medium (3,000 to 9,999 students), or large (10,000 or more students).

This report is purely descriptive in nature, and readers are cautioned not to draw causal inferences based solely on the results presented. It is important to note that the analysis variables employed in this report (i.e., institutional control, institutional size, and primary program types) may be related to one another, and complex interactions and relationships have not been explored here.<sup>1</sup> For example, 4-year public institutions tend to be larger than 4-year private not-for-profit institutions, and institutions with elementary but no secondary teacher education programs for initial licensure tend to be smaller than institutions with both elementary and secondary education programs and institutions with secondary but no elementary education programs. Release of this descriptive report and the data upon which it is based is intended to encourage more in-depth analyses of the relationship between these variables using more sophisticated statistical methods.

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<sup>1</sup> Survey variables were not examined by more than one institutional or program characteristic at a time due to the small cell sizes involved.

# Selected Findings

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## Prevalence and Types of Teacher Education Programs for Initial Licensure

Overall, 1,439 of the nation's 2,512 Title IV degree-granting 4-year institutions (57 percent) had teacher education programs for initial licensure (table 1), and these institutions were asked to provide information on the types of educational technology training received by preservice teachers. The survey found the following:

- Eighty-three percent of 4-year public institutions had teacher education programs for initial licensure, while 58 percent of 4-year private not-for-profit and 10 percent of 4-year private for-profit institutions had teacher education programs for initial licensure.
- With respect to institution enrollment size, a higher percentage of larger institutions than smaller ones had teacher education programs for initial licensure—94 percent of large institutions (10,000 or more students) had such programs, compared to 86 percent of medium institutions (3,000 to 9,999 students) and 42 percent of small institutions (less than 3,000 students).

Since postsecondary institutions with teacher education programs for initial licensure vary considerably in terms of the types and number of programs that they offer, the survey asked institutions whether they offered each of a list of common program types and found the following:

- Most commonly offered were elementary education and secondary education programs—89 percent of 4-year institutions with teacher education programs for initial licensure had elementary education programs, and 89 percent offered secondary education programs (table 2). Eighty-two percent offered teacher education programs in specific subject areas (e.g., second language education, art education, reading, mathematics). Fewer had multiple level (K–12) teacher education programs (67 percent), junior high/middle school education programs (62 percent), special education programs (60 percent), and early childhood education programs (57 percent).
- Overall, 81 percent of 4-year institutions with programs for initial licensure had both elementary and secondary education programs, while 8 percent had elementary but no secondary education programs, and 8 percent had secondary but no elementary education programs (table 3). Another 3 percent had only other program types, offering neither elementary nor secondary programs.

- Higher percentages of large and medium institutions than small institutions offered both elementary and secondary education programs for initial licensure (87 percent each versus 75 percent).<sup>2</sup>

## Educational Technology in the Curriculum

### Topics and Practices Taught

Title IV degree-granting 4-year institutions that had teacher education programs for initial licensure were asked to indicate whether particular topics and practices related to educational technology were taught in those programs. If the topics and practices were taught, respondents were asked to specify whether they were taught in *all* of their teacher education programs for initial licensure or just in *some* of their programs.<sup>3</sup> It must be pointed out that reports of topics taught within programs should not be taken to mean necessarily that the topics were taught in any depth or breadth across the curriculum. Rather, the estimates only indicate that the topics were taught *at least to a minimal degree* (e.g., by some faculty members, in some courses).

- Integrating technology into instruction was taught in all or some teacher education programs at all of the 4-year institutions with teacher education programs for initial licensure (table 4). Similarly, 100 percent of institutions with teacher education programs for initial licensure reported teaching the use of Internet resources and communication tools for instruction in all or some teacher education programs. Ninety percent or more of institutions taught developing curriculum plans using technology to address content standards (99 percent), using content specific software tools for instruction (97 percent), using multimedia digital content for instructions (95 percent), and using technology to access or manipulate data to guide instruction (90 percent) in all or some programs.
- Somewhat smaller, but still high percentages of institutions taught other topics and practices:
  - 88 percent taught applying technology in assessing student achievement with respect to state curriculum standards in all or some programs;
  - 82 percent taught creating or using digital portfolios in all or some programs; and

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<sup>2</sup> This association between institution size and program types may account for some of the differences by program type highlighted in the sections that follow.

<sup>3</sup> Institutions with only one teacher education program for initial licensure were instructed to select “yes, in all programs” if answering in the affirmative. Among institutions offering any educational technology training, an institution that has only one teacher education program will, by definition, fall in the “all” category, whereas an institution with multiple teacher education programs, with one not offering educational technology training, will be categorized as “some.” Thus, institutions with multiple teacher education programs have an increased probability of being categorized in the “some” category.

- 79 percent taught the use of student assessment and evaluation strategies that involve technology in all or some programs.
- Just over half (52 percent) of all 4-year institutions with teacher education programs for initial licensure provided instruction on teaching via distance learning in all or some programs.

Institutions with teacher education programs for initial licensure varied only to a small extent across institutional and program characteristics with respect to whether they taught certain educational technology-related topics and practices. Specifically:

- There were few differences of 10 or more percentage points between 4-year public and private not-for-profit institutions in terms of whether they taught the various topics and practices addressed in the survey (table 4). However, a higher percentage of public institutions than private not-for-profit institutions taught three of the topics in all or some teacher education programs: creating or using digital portfolios (92 percent versus 76 percent), using student assessment and evaluation strategies that involve technology (85 percent versus 75 percent), and teaching via distance learning (69 percent versus 40 percent).
- Institutions of different enrollment sizes differed very little in terms of whether they taught various topics and practices related to educational technology. However, as with the public/private not-for-profit comparison, a higher percentage of large and medium institutions than small institutions taught creating or using digital portfolios (93 and 86 percent versus 75 percent, respectively) and teaching via distance learning (68 and 60 percent versus 40 percent, respectively) in all or some teacher education programs.<sup>4</sup>
- A higher percentage of institutions with elementary and secondary education programs than institutions with elementary but no secondary and secondary but no elementary programs taught four of the topics in all or some teacher education programs: applying technology in assessing student achievement with respect to state curriculum standards (89 percent versus 84 and 79 percent), creating or using digital portfolios (85 percent versus 66 and 74 percent), using student assessment and evaluation strategies that involve technology (81 percent versus 69 and 78 percent), and teaching via distance learning (54 percent versus 41 and 42 percent).

## **How Educational Technology is Taught Within the Curriculum**

Respondents were asked about the various ways in which educational technology was taught within their institution's teacher education program(s) for initial licensure, including within 1- or 2-credit

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<sup>4</sup> This parallel points to the association between the control and size variables—4-year public institutions tend to have larger enrollment sizes than 4-year private not-for-profit institutions. Because of their larger size, 4-year public institutions tend also to have a greater number of programs, and hence have a greater chance of offering various topics, at least in some programs.



or 3- or 4-credit stand-alone courses, within methods or content courses, or within the field experiences of teacher candidates. The estimates below reflect reports of educational technology being taught *to some degree* by the various means asked about in the survey. So, for example, a report that educational technology was taught within methods courses at an institution does not reveal whether it was taught in few or many methods courses, nor does it indicate how extensively it was integrated into those courses.

- Ninety-three percent of 4-year institutions with teacher education programs for initial licensure reported teaching educational technology within methods courses, while 79 percent reported that educational technology was taught within the field experiences of teacher candidates, and 71 percent said it was taught within content courses (table 5). About half (51 percent) of all institutions offered 3- or 4-credit stand-alone courses in educational technology in their programs, and about a third (34 percent) offered 1- or 2-credit stand-alone courses in educational technology.
- There were few notable differences among 4-year institutions in the ways in which educational technology was taught with respect to control, size, and program types. There were, however, some exceptions:
  - A greater percentage of public institutions than private not-for-profit institutions (60 percent versus 47 percent) taught educational technology in 3- or 4-credit stand-alone courses.
  - A higher percentage of medium and large institutions than small institutions had 3- or 4-credit stand-alone courses in educational technology (58 and 54 percent, respectively, versus 46 percent).
  - Approximately 50 percent of institutions with various types of teacher education programs reported teaching 3- or 4-credit stand-alone courses in educational technology.
  - A smaller percentage of institutions with secondary but no elementary programs than institutions with elementary and secondary programs and institutions with elementary but no secondary programs taught educational technology in 1- or 2-credit stand-alone courses (20 percent versus 35 and 35 percent).

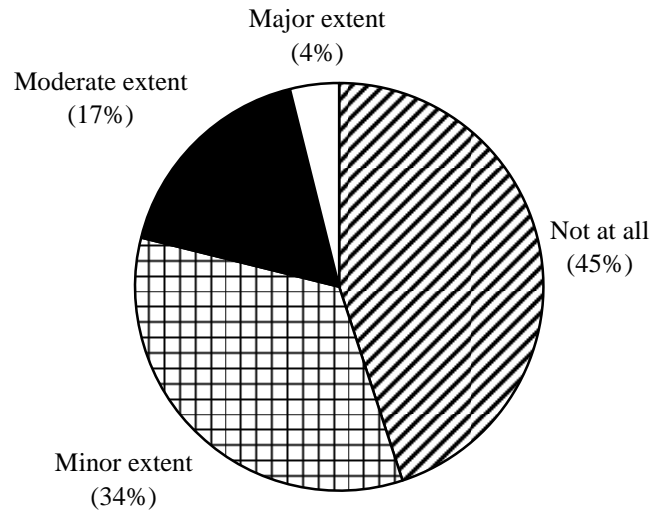
## **Differences Between Elementary and Secondary Education Programs**

Institutions that reported both elementary and secondary education programs were asked about the extent to which there were differences between these two programs for initial licensure with respect to the educational technology training for teacher candidates. Respondents could select from “not at all,” “minor extent,” “moderate extent,” and “major extent.”

- Of the 4-year institutions that had both elementary and secondary teacher education programs for initial licensure, 45 percent said that their elementary and secondary education programs differed not at all with respect to the educational technology training for their teacher candidates, and 34 percent reported that the programs differed to a “minor extent” (table 6 and figure 1).
- A greater percentage of private not-for-profit institutions than public institutions said that their elementary and secondary education programs differed not at all in terms of the educational technology training of teacher candidates (50 percent versus 35 percent), and a higher percentage of small and medium institutions than large institutions reported that their elementary and secondary education programs did not differ at all (52 and 45 percent, respectively, versus 32 percent).

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**Figure 1. Percentage distribution of Title IV degree-granting 4-year institutions with both elementary and secondary education programs for initial licensure, by the extent to which the programs differed with respect to the educational technology training for teacher candidates: 2006**



NOTE: The percentage distribution is based on the 1,163 institutions that had both elementary and secondary teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), “Educational Technology in Teacher Education Programs for Initial Licensure,” PEQIS 15, 2006.

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## Teaching Educational Technology Tools for Various Purposes

Respondents were asked about the extent to which their institutions’ teacher education programs for initial licensure taught teacher candidates how to use technology tools for various purposes, including enhancing or enriching classroom instruction, understanding individual student learning styles,

assessing individual student progress and challenges, and designing instructional interventions to individualize student instruction.

- Nearly all institutions with teacher education programs for initial licensure taught teacher candidates to use technology tools for enhancing or enriching classroom instruction, with 57 percent doing so to a major extent and 40 percent doing so to a moderate extent (table 7). Smaller percentages of institutions taught the use of technology tools to a major extent with respect to understanding individual student learning styles (15 percent), assessing individual student progress and challenges (17 percent), and designing instructional interventions to individualize student instruction (17 percent), although about half did so to a moderate extent for each of these purposes (45 to 49 percent).
- There were no notable differences (of 10 or more percentage points) between institutions with respect to control (public versus private not-for-profit) or size for any of the four purposes addressed in the survey. A greater percentage of institutions with elementary and secondary education programs than institutions with secondary but no elementary education programs taught educational technology tools for assessing individual student progress and challenges (51 percent versus 40 percent) and for understanding individual student learning styles (47 versus 35 percent) to a moderate extent.

## **Barriers to Integrating Educational Technology Within Programs**

Four-year institutions with teacher education programs for initial licensure were asked to report the extent to which various barriers hindered the ability of programs to integrate educational technology into the daily teaching and learning environment of teacher candidates.<sup>5</sup> The findings indicate that while most institutions had programs that were teaching to some degree a wide variety of topics relating to educational technology, many of these institutions were at the same time facing a variety of barriers that were impeding their efforts in this respect.

- Faculty members' lack of time, training, and interest were barriers to some extent with respect to integrating technology:
  - Faculty's lack of time was reported as a barrier by 87 percent of institutions, with 11 percent reporting lack of time to be a barrier to a major extent, 34 percent saying it was a barrier to a moderate extent, 42 percent saying to a minor extent, and 13 percent saying not at all (table 8).

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<sup>5</sup> Besides the barriers asked about in the survey, others could have been present but were not addressed in the survey, including inadequate computers or software, frequent equipment break-downs and inadequate technical support, server crashes, and so on.

- Lack of training was reported as a barrier by 83 percent of institutions, with 5 percent reporting it as a barrier to a major extent, 29 percent saying to a moderate extent, 49 percent saying to a minor extent, and 17 percent reporting not at all.
- Lack of interest was a barrier according to 73 percent of institutions, with 3 percent citing it as a barrier to a major extent, 21 percent citing it to a moderate extent, 49 percent citing to a minor extent, and 27 percent saying it was not a barrier at all.
- Six percent of institutions indicated that their school, college, or department’s educational technology infrastructure was a barrier to integrating technology to a major extent, while 20 percent reported it as a barrier to a moderate extent, 33 percent reported to a minor extent, and 41 percent said not at all.
- Teacher candidates’ lack of interest was not considered by most institutions to be a significant barrier—54 percent reported that candidates’ lack of interest was not at all a barrier, and 41 percent reported it as a barrier to a minor extent.

There was little variation by institutional and program characteristics with respect to most of the barriers to technology integration asked about in the survey. However, there was variation across institutions in the extent to which educational technology infrastructure was reported as a barrier.

- A higher percentage of private not-for-profit institutions than public institutions reported their school, college, or department’s educational technology infrastructure to be a barrier to a moderate or major extent (31 percent versus 20 percent) (table 9).<sup>6</sup>
- A greater percentage of small institutions than medium and large institutions considered their school’s educational technology infrastructure a barrier to technology integration to a moderate or major extent (33 percent versus 21 and 17 percent, respectively).
- A higher percentage of institutions with elementary but no secondary education programs and institutions with secondary but no elementary programs than institutions with elementary and secondary education programs reported that their school’s educational technology infrastructure was a barrier to a moderate or major extent (32 and 33 percent versus 25 percent).

## Field Experiences

Four-year institutions with teacher education programs for initial licensure were asked to indicate the extent to which various barriers hindered teacher candidates’ ability to practice educational technology-related skills and knowledge during their field experiences. Again, findings suggest that while most institutions (79 percent) reported that educational technology was taught to at least to some extent

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<sup>6</sup> Since so few institutions reported in the major extent category, the analysis by institutional and program characteristics focuses on the combined moderate and major categories.

within the field experiences of teacher candidates (table 5), many of these institutions at the same time reported a variety of barriers that were limiting the effectiveness of such efforts.

- Competing priorities in the classroom was perceived as a barrier to the practice of educational technology-related skills and knowledge during field experiences at least to some extent by 93 percent of the institutions. Thirty-nine percent of the institutions felt that competing priorities in the classroom was a barrier to a major extent, while 35 percent indicated it was a barrier to a moderate extent, and 19 percent reported it was a barrier to a minor extent (table 10).
- Although the availability of technology infrastructure in the schools was cited as a barrier at least to some extent by 92 percent of the institutions, it was perceived as a barrier to a major extent by a smaller percentage of institutions (29 percent) than was competing priorities in the classroom (39 percent). In addition, 44 percent of institutions reported that availability of technology infrastructure in the schools was a barrier to a moderate extent, and 19 percent reported it was a barrier to a minor extent.
- Lack of training or skill, time, and willingness of supervising teachers to integrate technology into their classrooms were each also considered barriers to a significant extent:
  - Lack of training or skill was reported by 22 percent of institutions to be a barrier to a major extent, with 43 percent saying to a moderate extent and 24 percent saying to a minor extent.
  - Lack of time was reported by 18 percent of institutions to be a barrier to a major extent, with 44 percent reporting to a moderate extent and 24 percent reporting to a minor extent.
  - Lack of willingness was reported by 12 percent to be a barrier to a major extent, with 42 percent reporting to a moderate extent and 32 percent reporting to a minor extent.
- Limited skills and knowledge on the part of teacher candidates was generally not viewed as a substantial barrier, with 32 percent reporting not at all and 50 percent reporting to a minor extent, compared to 15 percent reporting to a moderate extent and 2 percent reporting to a major extent.

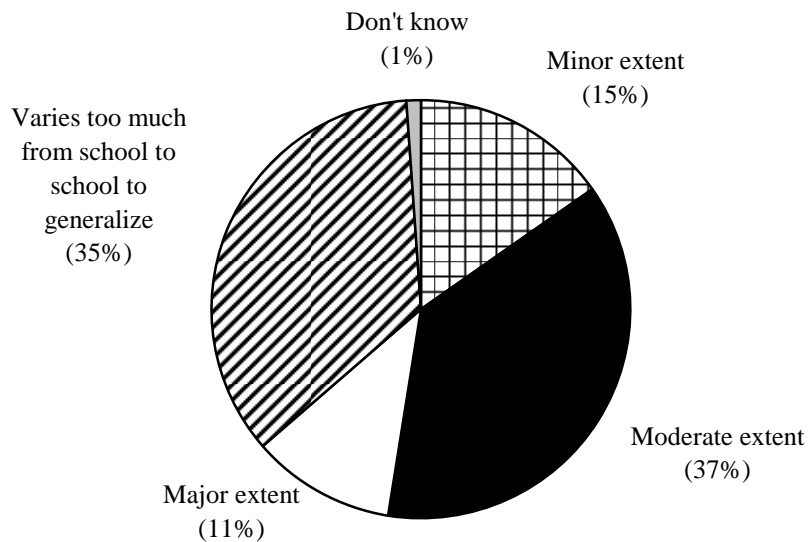
There were no notable differences by institutional control or size with respect to reporting various barriers to practicing educational technology-related skills and knowledge during field experiences to a moderate or major extent (table 11). Nearly one-third (31 percent) of institutions with elementary but no secondary education programs reported limited skills and knowledge on the part of teacher candidates as a barrier to a moderate or major extent during field experiences, compared to 16 percent of institutions with elementary and secondary education programs and 20 percent of institutions with secondary but no elementary education programs.

Four-year institutions with teacher education programs for initial licensure were also asked to specify the extent to which teacher candidates were able to practice the technology-related skills and knowledge they acquire in their coursework during their field experiences. Respondents could select from “not at all,” “minor extent,” “moderate extent,” “major extent,” “varies too much from school to school to generalize,” and “don’t know.”

- Overall, although about one-third (35 percent) of the institutions reported too much variation from school to school to generalize, nearly one-half (48 percent) of the institutions reported that the teacher candidates were able to practice their technology-related skills and knowledge to a moderate or major extent during their field experiences (table 12 and figure 2). Eleven percent of institutions reported that teacher candidates were able to practice technology-related skills and knowledge during their field experiences to a major extent, and 37 percent reported they were able to practice them to a moderate extent.

Overall, there was little variation across institutional and program characteristics. However, a greater percentage of large institutions than medium and small institutions reported that the ability of teacher candidates to practice their technology-related skills varied too much from school to school to generalize (42 percent versus 35 and 33 percent, respectively) (table 12).

**Figure 2. Percentage distribution of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting the extent to which teacher candidates are able to practice during their field experiences the technology-related skills and knowledge they acquire in their coursework: 2006**



NOTE: The percentage distribution is based on the 1,163 institutions that had both elementary and secondary teacher education programs for initial licensure. A small percentage of institutions (5 institutions or less than 0.5 percent) answered “not at all.” Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), “Educational Technology in Teacher Education Programs for Initial Licensure,” PEQIS 15, 2006.

## Technology Training for Faculty

The survey collected information on professional development or training opportunities related to educational technology that were available to faculty who taught in teacher education programs for initial licensure.

- Ninety-one percent of 4-year institutions with teacher education programs for initial licensure reported offering professional development or training opportunities for faculty in the use and application of educational technologies (table 13). About three-quarters (76 percent) offered opportunities for faculty to learn about the development of curricula that integrate educational technologies into their courses, and 54 percent provided professional development or training in teaching methods for distance education courses.

Four-year institutions varied substantially across institutional characteristics in terms of the availability of professional development or training opportunities relating to educational technology.

- A higher percentage of public institutions than private not-for-profit institutions offered training in the use and application of educational technologies (96 percent versus 89 percent), development of curricula that integrate educational technologies (81 percent versus 73 percent), and teaching methods for distance education courses (75 percent versus 41 percent).
- A greater percentage of larger institutions than smaller institutions offered professional development or training opportunities relating to educational technology. For example, a higher percentage of large and medium institutions than small institutions provided professional development or training opportunities to faculty in the use and application of educational technologies (95 percent each versus 87 percent). Further, a higher percentage of large institutions than both medium and small institutions offered training opportunities to faculty in development of curricula that integrate educational technology (83 percent versus 78 and 73 percent, respectively) and teaching methods for distance education courses (74 percent versus 66 and 39 percent, respectively).

## Perceived Program Outcomes

Institutions were asked to report the extent to which they agreed or disagreed with various statements regarding program graduates' capabilities and skills. Most institutions agreed with statements about positive outcomes for program graduates.

- Nearly all institutions with teacher education programs for initial licensure agreed that program graduates possess the skills to integrate technology into instruction in their classrooms, with 67 percent agreeing strongly and 32 percent agreeing somewhat (table 14).

- Almost all institutions agreed with the statement that program graduates can construct project-based learning lessons involving educational technology, with 44 percent agreeing strongly and 52 percent agreeing somewhat.
- A substantial number of institutions agreed that graduates have the experience to integrate technology into instruction in their classrooms, with 35 percent agreeing strongly and 54 percent agreeing somewhat.
- Fewer institutions, albeit still a majority, agreed about the ability of program graduates to recognize when a student with special needs would benefit significantly by the use of adaptive/assistive technology—18 percent agreed strongly, 61 percent agreed somewhat, and 18 percent disagreed somewhat with this assertion.

There was little variation in the levels of agreement with these statements between public institutions and private not-for-profit institutions, but larger differences were detected in levels of agreement between institutions with different enrollment sizes. In particular, a greater percentage of small and medium institutions than large institutions agreed strongly with the various statements about outcomes for program graduates.

- A higher percentage of small and medium institutions than large institutions strongly agreed that program graduates possess the requisite skills to integrate technology into their classroom teaching (68 percent each versus 61 percent), are capable of constructing project-based learning lessons involving educational technology (45 percent each versus 40 percent), have the experience to integrate technology into their instruction (36 percent and 39 percent versus 27 percent), and can recognize when a special needs student could use adaptive/assistive technology (20 percent each versus 11 percent) (table 15).



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# Conclusion

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The 2006 “Educational Technology in Teacher Education Programs for Initial Licensure” survey addressed the types of educational technology training entering teachers receive in preservice teacher education programs offered in Title IV degree-granting 4-year postsecondary institutions. Findings from the survey were based on descriptive analyses and suggest that in 2006 educational technology was a component of the preparation of teacher candidates within the 1,439 Title IV degree-granting 4-year institutions with teacher education programs for initial licensure. In general, the institutions did not vary much by institutional and program characteristics, a finding that indicates a fairly common approach to educational technology across the nation’s teacher education programs for initial licensure.

Institutions with teacher education programs for initial licensure reported teaching a variety of educational technology-related topics and practices in all or some of their teacher education programs for initial licensure, although it should be kept in mind that the reporting of topics taught does not indicate the extent of coverage of each topic. While about half of all of these institutions offered 3- or 4-credit stand-alone courses in educational technology in their programs, many also taught educational technology within methods courses (93 percent), within the field experiences of teacher candidates (79 percent), and within content courses (71 percent).

In addition, the majority of institutions offering teacher education programs for initial licensure reported that they had prepared their teacher candidates (to a moderate or major extent) to use educational technology for a variety of purposes, including enhancing or enriching classroom instruction, understanding individual student learning styles, assessing individual student progress and challenges, and designing instructional interventions to individualize student instruction. Large majorities of institutions agreed (strongly or somewhat) that their program graduates possess the skills and experience to integrate technology into instruction, and can construct project-based learning lessons involving educational technology.

At the same time, institutions reported a variety of barriers that hindered the ability of programs to integrate educational technology into the daily teaching and learning environments of teacher candidates. For example, several faculty-related barriers hindered this integration to a moderate or major extent, including lack of time (45 percent), training (34 percent), and interest (24 percent). A majority of institutions reported a variety of moderate or major barriers to the ability of teacher candidates to practice

educational technology-related skills and knowledge during their field experiences, including competing priorities in the classroom (74 percent), available technology infrastructure in the schools (73 percent), and lack of training or skill (64 percent), time (62 percent), and willingness (53 percent) on the part of supervising teachers to integrate technology in their classrooms. The study findings suggest, therefore, that while institutions with teacher education programs for initial licensure were oriented toward preparing their teacher candidates to use educational technology, many reported a range of barriers that impeded these efforts within both program coursework and field experiences.

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# **Tables of Estimates**

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**Table 1. Number and percent of Title IV degree-granting 4-year institutions with any teacher education programs for initial licensure of PK–12 teachers, by institutional characteristics: 2006**

Institutional characteristic	Total number of institutions	Institutions with teacher education programs for initial licensure	
		Number	Percent
All 4-year institutions .....	2,512	1,439	57
Institution control			
Public .....	632	523	83
Private not-for-profit.....	1,513	880	58
Private for-profit .....	367	36	10
Institution size			
Less than 3,000 .....	1,713	727	42
3,000 to 9,999 .....	490	421	86
10,000 or more.....	309	291	94

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.



**Table 2. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that offered various types of programs, by institutional characteristics: 2006**

Institutional characteristic	Elementary education	Secondary education	Teacher education in specific subject areas	Teacher education, multiple levels (K-12)	Junior high/middle school education	Special education	Early childhood education
4-year institutions with teacher education programs for initial licensure.....	89	89	82	67	62	60	57
Institution control							
Public .....	90	92	89	74	66	77	72
Private not-for-profit.....	89	87	80	65	60	48	48
Private for-profit .....	88	86	15	11	76	77	71
Institution size							
Less than 3,000 .....	87	84	75	62	58	44	48
3,000 to 9,999 .....	92	93	87	71	66	71	62
10,000 or more.....	91	95	92	74	68	82	74

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 3. Number and percentage distribution of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure with various configurations of basic program types, by institutional characteristics: 2006**

Institutional characteristic	Elementary and secondary education programs		Elementary, but no secondary education programs		Secondary, but no elementary education programs		Other program types, but no elementary or secondary education programs	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
4-year institutions with teacher education programs for initial licensure.....	1,163	81	121	8	116	8	39	3
Institution control								
Public .....	441	84	31	6	39	8	12	2
Private not-for-profit.....	694	79	87	10	74	8	25	3
Private for-profit .....	28	79	3	8	2	7	2	6
Institution size								
Less than 3,000 .....	545	75	91	13	64	9	28	4
3,000 to 9,999 .....	365	87	20	5	28	7	7	2
10,000 or more.....	254	87	10	3	23	8	4	1

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 4. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that taught various educational technology-related topics and practices in all or some of their teacher education programs, by institutional and program characteristics: 2006**

Institutional and program characteristic	Integrating technology into instruction			Using Internet resources and communication tools for instruction			Developing curriculum plans using technology to address content standards		
	Total	All programs	Some programs	Total	All programs	Some programs	Total	All programs	Some programs
4-year institutions with teacher education programs for initial licensure.....	100	88	12	100	85	14	99	76	22
Institution control									
Public .....	100	87	12	100	85	15	99	74	25
Private not-for-profit.....	100	88	12	100	85	15	98	80	19
Private for-profit .....	100	97	3	100	97	3	100	22	78
Institution size									
Less than 3,000 .....	100	89	11	99	86	14	99	80	19
3,000 to 9,999 .....	100	87	13	100	85	15	98	74	24
10,000 or more .....	100	86	14	100	85	15	100	70	29
Types of teacher education programs for initial licensure									
Elementary and secondary education programs.....	100	87	12	100	85	15	99	76	23
Elementary but no secondary education programs.....	100	89	11	99	88	12	98	79	19
Secondary but no elementary education programs.....	100	92	8	99	88	11	97	76	22
Other program structures .....	100	86	14	97	91	6	100	75	25

See notes at end of table.

**Table 4. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that taught various educational technology-related topics and practices in all or some of their teacher education programs, by institutional and program characteristics: 2006—Continued**

Institutional and program characteristic	Using content specific software tools for instruction			Using multimedia digital content for instruction			Using technology to access or manipulate data to guide instruction		
	Total	All programs	Some programs	Total	All programs	Some programs	Total	All programs	Some programs
4-year institutions with teacher education programs for initial licensure.....	97	58	38	95	68	27	90	55	35
Institution control									
Public .....	98	59	39	98	67	31	93	52	41
Private not-for-profit.....	96	59	37	93	67	26	87	58	29
Private for-profit.....	94	18	76	100	97	3	97	20	78
Institution size									
Less than 3,000 .....	96	61	35	93	72	21	88	61	26
3,000 to 9,999 .....	97	55	42	96	66	31	91	52	39
10,000 or more.....	99	56	42	97	62	36	94	44	49
Types of teacher education programs for initial licensure									
Elementary and secondary education programs.....	98	57	41	96	67	29	91	54	37
Elementary but no secondary education programs.....	91	64	27	92	69	23	89	67	22
Secondary but no elementary education programs.....	93	62	31	92	70	21	88	59	29
Other program structures.....	87	70	17	86	78	9	68	46	22

See notes at end of table.

**Table 4. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that taught various educational technology-related topics and practices in all or some of their teacher education programs, by institutional and program characteristics: 2006—Continued**

Institutional and program characteristic	Applying technology in assessing student achievement with respect to state curriculum standards			Creating or using digital portfolios		
	Total	All programs	Some programs	Total	All programs	Some programs
4-year institutions with teacher education programs for initial licensure.....	88	56	32	82	50	32
Institution control						
Public .....	90	55	35	92	52	40
Private not-for-profit.....	86	57	28	76	51	25
Private for-profit.....	94	17	77	88	11	76
Institution size						
Less than 3,000 .....	86	60	26	75	52	23
3,000 to 9,999 .....	88	52	36	86	51	35
10,000 or more.....	92	49	42	93	47	47
Types of teacher education programs for initial licensure						
Elementary and secondary education programs .....	89	55	34	85	51	34
Elementary but no secondary education programs.....	84	64	20	66	44	22
Secondary but no elementary education programs.....	79	48	31	74	53	21
Other program structures.....	89	67	22	74	60	14

See notes at end of table.

**Table 4. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that taught various educational technology-related topics and practices in all or some of their teacher education programs, by institutional and program characteristics: 2006—Continued**

Institutional and program characteristic	Using student assessment and evaluation strategies that involve technology			Teaching via distance learning		
	Total	All programs	Some programs	Total	All programs	Some programs
4-year institutions with teacher education programs for initial licensure.....	79	41	38	52	18	34
Institution control						
Public .....	85	39	46	69	19	49
Private not-for-profit.....	75	44	32	40	14	26
Private for-profit .....	94	11	83	89	85	4
Institution size						
Less than 3,000 .....	77	46	31	40	17	23
3,000 to 9,999 .....	80	38	41	60	18	42
10,000 or more .....	86	35	51	68	19	50
Types of teacher education programs for initial licensure						
Elementary and secondary education programs .....	81	41	40	54	18	36
Elementary but no secondary education programs.....	69	44	26	41	21	20
Secondary but no elementary education programs.....	78	42	35	42	11	31
Other program structures .....	57	29	28	49	24	25

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure. Institutions with only one teacher education program for initial licensure were instructed to select “yes, in all programs” if answering in the affirmative. Among institutions offering any educational technology training, an institution that has only one education program will, by definition, fall in the “all” category; whereas an institution with multiple education programs, with one not offering educational technology training, will be categorized as “some.” Thus institutions with multiple education programs have an increased probability of being categorized in the “some” category. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), “Educational Technology in Teacher Education Programs for Initial Licensure,” PEQIS 15, 2006.

**Table 5. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that taught educational technology through various means, by institutional and program characteristics: 2006**

Institutional and program characteristic	Within methods courses	Within the field experiences of teacher candidates	Within content courses	Within 3- or 4-credit stand-alone courses	Within 1- or 2-credit stand-alone courses	Other
4-year institutions with teacher education programs for initial licensure .....	93	79	71	51	34	15
Institution control						
Public .....	93	81	71	60	34	15
Private not-for-profit.....	93	77	73	47	34	15
Private for-profit .....	92	94	21	21	6	3
Institution size						
Less than 3,000 .....	94	81	74	46	33	13
3,000 to 9,999 .....	92	76	68	58	30	17
10,000 or more .....	94	80	70	54	39	16
Types of teacher education programs for initial licensure						
Elementary and secondary education programs .....	93	79	71	51	35	15
Elementary but no secondary education programs ....	95	81	76	48	35	11
Secondary but no elementary education programs ....	97	84	74	51	20	15
Other program structures .....	84	68	73	44	24	5

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 6. Percentage distribution of Title IV degree-granting 4-year institutions with both elementary and secondary education programs for initial licensure reporting the extent to which elementary and secondary education programs differed with respect to the educational technology training for teacher candidates, by institutional characteristics: 2006**

Institutional characteristic	Not at all	Minor extent	Moderate extent	Major extent
4-year institutions with both elementary and secondary education programs for initial licensure .....	45	34	17	4
Institution control				
Public .....	35	38	22	5
Private not-for-profit.....	50	33	14	3
Private for-profit .....	100	0	0	0
Institution size				
Less than 3,000 .....	52	31	14	3
3,000 to 9,999 .....	45	35	15	6
10,000 or more .....	32	40	25	3

NOTE: The percentage distribution is based on the 1,163 institutions that had both elementary and secondary teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.



**Table 7. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that taught educational technology tools for various purposes to different extents, by institutional and program characteristics: 2006**

Institutional and program characteristic	Enhancing or enriching classroom instruction				Understanding individual student learning styles			
	Not at all	Minor extent	Moderate extent	Major extent	Not at all	Minor extent	Moderate extent	Major extent
4-year institutions with teacher education programs for initial licensure .....	#	3	40	57	4	35	45	15
Institution control								
Public .....	#	3	34	63	4	36	45	16
Private not-for-profit.....	#	3	41	56	5	36	44	15
Private for-profit .....	0	3	90	7	3	8	83	6
Institution size								
Less than 3,000 .....	#	3	42	55	4	36	45	15
3,000 to 9,999 .....	1	3	37	59	5	33	46	17
10,000 or more .....	0	3	38	59	4	37	47	11
Types of teacher education programs for initial licensure								
Elementary and secondary education programs.....	#	3	40	57	4	35	47	14
Elementary but no secondary education programs.....	2	5	36	57	2	34	47	17
Secondary but no elementary education programs.....	0	2	35	63	8	37	35	21
Other program structures .....	3	3	56	38	13	41	38	8

See notes at end of table.

**Table 7. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that taught educational technology tools for various purposes to different extents, by institutional and program characteristics: 2006—Continued**

Institutional and program characteristic	Assessing individual student progress and challenges				Designing instructional interventions to individualize student instruction			
	Not at all	Minor extent	Moderate extent	Major extent	Not at all	Minor extent	Moderate extent	Major extent
4-year institutions with teacher education programs for initial licensure .....	4	30	49	17	4	30	49	17
Institution control								
Public .....	3	28	49	19	2	30	49	19
Private not-for-profit .....	4	31	48	16	5	31	48	16
Private for-profit .....	3	8	83	6	6	6	79	10
Institution size								
Less than 3,000 .....	4	30	49	17	5	29	48	17
3,000 to 9,999 .....	4	27	50	19	3	29	49	19
10,000 or more .....	3	33	49	15	2	33	51	15
Types of teacher education programs for initial licensure								
Elementary and secondary education programs .....	3	29	51	17	4	30	49	17
Elementary but no secondary education programs .....	7	30	46	17	3	30	51	16
Secondary but no elementary education programs .....	2	35	40	23	4	24	54	18
Other program structures .....	8	41	41	10	13	30	41	16

# Rounds to zero.

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 8. Percentage distribution of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting the extent to which various barriers hindered the ability of programs to integrate educational technology into the daily teaching and learning environments of teacher candidates: 2006**

Barrier	Not at all	Minor extent	Moderate extent	Major extent
Faculty members' lack of time for training and developing their technology skills .....	13	42	34	11
Faculty members' lack of training to use technology in their own classrooms.....	17	49	29	5
Faculty members' lack of interest in integrating technology into their teaching.....	27	49	21	3
School, college, or department's educational technology infrastructure...	41	33	20	6
Teacher candidates' lack of interest in using technology .....	54	41	5	#

# Rounds to zero.

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 9. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting that various barriers hindered the ability of programs to integrate educational technology into the daily teaching and learning environments of teacher candidates to a moderate or major extent, by institutional and program characteristics: 2006**

Institutional and program characteristic	Faculty's lack of time for training and developing technology skills	Faculty's lack of training to use technology in their own classrooms	Faculty's lack of interest in integrating technology into their teaching	School, college, or department's educational technology infrastructure	Teacher candidates' lack of interest in using technology
4-year institutions with teacher education programs for initial licensure .....	45	34	24	26	5
Institution control					
Public .....	45	34	26	20	4
Private not-for-profit.....	47	36	24	31	6
Private for-profit .....	8	6	3	8	0
Institution size					
Less than 3,000 .....	44	35	22	33	7
3,000 to 9,999 .....	44	33	27	21	5
10,000 or more .....	49	35	25	17	3
Types of teacher education programs for initial licensure					
Elementary and secondary education programs .....	46	35	25	25	5
Elementary but no secondary education programs ....	48	35	18	32	5
Secondary but no elementary education programs ....	39	30	20	33	7
Other program structures .....	43	22	19	16	5

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure.  
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 10. Percentage distribution of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting the extent of various barriers to the practice of educational technology-related skills and knowledge during field experiences: 2006**

Barrier	Not at all	Minor extent	Moderate extent	Major extent	Don't know
Competing priorities in the classrooms .....	4	19	35	39	4
Availability of technology infrastructure in the schools.....	6	19	44	29	2
Lack of training or skill of supervising teachers to integrate technology in their classrooms .....	6	24	43	22	5
Lack of time for supervising teachers to integrate technology in their classrooms .....	7	24	44	18	6
Lack of willingness of supervising teachers to integrate technology in their classrooms .....	10	32	42	12	4
Limited skills and knowledge on the part of teacher candidates.....	32	50	15	2	1

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 11. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting that various barriers hindered the practice of educational technology-related skills and knowledge during field experiences to a moderate or major extent, by institutional and program characteristics: 2006**

Institutional and program characteristic	Competing priorities in the classrooms	Availability of technology infrastructure in the schools	Lack of training or skill of supervising teachers to integrate technology	Lack of time for supervising teachers to integrate technology	Lack of willingness of supervising teachers to integrate technology	Limited skills and knowledge on the part of teacher candidates
4-year institutions with teacher education programs for initial licensure .....	74	73	64	62	53	17
Institution control						
Public .....	76	72	63	62	51	18
Private not-for-profit.....	75	73	65	62	54	17
Private for-profit .....	15	83	79	74	74	8
Institution size						
Less than 3,000 .....	72	73	62	63	52	19
3,000 to 9,999 .....	71	74	67	58	55	15
10,000 or more .....	80	74	65	65	52	17
Types of teacher education programs for initial licensure						
Elementary and secondary education programs.....	74	73	64	62	53	16
Elementary but no secondary education programs ....	72	77	67	67	61	31
Secondary but no elementary education programs ....	74	75	67	57	52	20
Other program structures .....	73	57	57	60	46	16

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 12. Percentage distribution of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting the extent to which teacher candidates are able to practice during their field experiences the technology-related skills and knowledge they acquire in their coursework, by institutional and program characteristics: 2006**

Institutional and program characteristic	Not at all	Minor extent	Moderate extent	Major extent	Varies too much from school to school to generalize	Don't know
4-year institutions with teacher education programs for initial licensure .....	#	15	37	11	35	1
<b>Institution control</b>						
Public .....	0	12	37	13	37	2
Private not-for-profit.....	#	17	39	10	33	1
Private for-profit.....	3	9	12	3	74	0
<b>Institution size</b>						
Less than 3,000 .....	#	15	39	11	33	1
3,000 to 9,999 .....	#	13	39	12	35	1
10,000 or more.....	1	15	32	9	42	1
<b>Types of teacher education programs for initial licensure</b>						
Elementary and secondary education programs .....	#	14	38	11	36	1
Elementary but no secondary education programs ....	2	19	36	14	28	1
Secondary but no elementary education programs ....	0	15	41	11	32	1
Other program structures .....	3	19	29	8	38	3

# Rounds to zero.

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 13. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure that made available various professional development or training opportunities to faculty in their teacher education program(s), by institutional and program characteristics: 2006**

Institutional and program characteristic	Use and application of educational technologies	Development of curricula that integrate educational technologies into their courses	Teaching methods for distance education courses	Other training opportunities relating to educational technology
4-year institutions with teacher education programs for initial licensure .....	91	76	54	18
Institution control				
Public .....	96	81	75	21
Private not-for-profit.....	89	73	41	17
Private for-profit .....	90	85	82	6
Institution size				
Less than 3,000 .....	87	73	39	16
3,000 to 9,999 .....	95	78	66	20
10,000 or more .....	95	83	74	21
Types of teacher education programs for initial licensure				
Elementary and secondary education programs .....	92	77	56	19
Elementary but no secondary education programs ....	85	70	45	16
Secondary but no elementary education programs ....	91	80	45	14
Other program structures .....	79	59	41	16

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure.  
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.



**Table 14. Percentage distribution of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting the extent of agreement with various statements about outcomes for program graduates: 2006**

Program outcome	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
Program graduates have the <i>skills</i> to integrate technology into instruction in their classrooms.....	#	1	32	67
Program graduates can construct project-based learning lessons involving educational technology.....	#	4	52	44
Program graduates have the <i>experience</i> to integrate technology into instruction in their classrooms.....	1	10	54	35
Program graduates are able to recognize when a student with special needs may benefit significantly by the use of adaptive/assistive technology.....	3	18	61	18

# Rounds to zero.

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

**Table 15. Percent of Title IV degree-granting 4-year institutions with teacher education programs for initial licensure reporting that they strongly agree with various statements about outcomes for program graduates, by institutional and program characteristics: 2006**

Institutional and program characteristic	Program graduates have the <i>skills</i> to integrate technology into instruction in their classrooms	Program graduates can construct project-based learning lessons involving educational technology	Program graduates have the <i>experience</i> to integrate technology into instruction in their classrooms	Program graduates are able to recognize when a student with special needs may benefit significantly by the use of adaptive/assistive technology
4-year institutions with teacher education programs for initial licensure .....	67	44	35	18
Institution control				
Public .....	63	42	35	15
Private not-for-profit.....	69	43	33	21
Private for-profit.....	83	86	86	11
Institution size				
Less than 3,000 .....	68	45	36	20
3,000 to 9,999 .....	68	45	39	20
10,000 or more.....	61	40	27	11
Types of teacher education programs for initial licensure				
Elementary and secondary education programs.....	67	45	35	18
Elementary but no secondary education programs ....	61	36	39	13
Secondary but no elementary education programs ....	70	37	33	19
Other program structures .....	60	44	35	30

NOTE: Responses are based on the 1,439 institutions that had teacher education programs for initial licensure.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), "Educational Technology in Teacher Education Programs for Initial Licensure," PEQIS 15, 2006.

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**Appendix A**

**Technical Notes**

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# Technical Notes

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The Postsecondary Education Quick Information System (PEQIS) was established in 1991 by the National Center for Education Statistics (NCES), U.S. Department of Education (ED). PEQIS is designed to conduct brief surveys of postsecondary institutions or state higher education agencies on postsecondary education topics of national importance. Surveys are generally limited to three pages of questions, with a response burden of about 30 minutes per respondent.

## The Study Population

Most PEQIS institutional surveys use a previously recruited, nationally representative panel of institutions. The PEQIS survey on educational technology in teacher education programs for initial licensure, however, was exceptional in that it was determined that the existing PEQIS panel was too small to yield sufficiently high numbers of eligible institutions (i.e., Title IV degree-granting 4-year postsecondary institutions with teacher education programs for initial licensure) for analytic purposes. Therefore, rather than rely exclusively on the PEQIS panel, the survey was administered to all 2,512 Title IV degree-granting 4-year public and private postsecondary institutions in the 50 states and the District of Columbia. The study population was drawn from the 2004 Integrated Postsecondary Education Data System (IPEDS), “Institutional Characteristics” survey (IPEDS-IC).

## Data Collection

In May 2006, questionnaires (see appendix B) were mailed to the PEQIS coordinators at institutions in the PEQIS panel and to presidents at the remaining institutions. Coordinators and presidents were told that the survey was designed to be completed by the person or persons at the institution most knowledgeable about the role of educational technology in the institution’s teacher education programs for initial licensure. Respondents had the option of completing the survey online.

Telephone follow-up of nonrespondents was initiated in June 2006, and data collection was completed in September 2006. The final response rate for this survey was 95 percent. Of the institutions that completed the survey, 42 percent completed it online, 26 percent completed it by mail, 7 percent completed it by fax, and 25 percent completed it by telephone. Normally, with a census, it is not necessary to weight the survey results to obtain national estimates. However, because of nonresponse,

weighting adjustments were used to compensate for the 5 percent of institutions that did not complete the survey. The adjustment, which varied across cells defined by type of control, highest level of offering, and enrollment size class, was the ratio of the number of eligible institutions in the cell to the corresponding number of responding institutions in the cell. The weight for an institution in a given cell was equal to this adjustment. The weighted number of institutions in the survey represents the universe of 2,512 Title IV degree-granting 4-year institutions in the 50 states and the District of Columbia.

## Imputation for Item Nonresponse

Weighted item nonresponse rates ranged from 0 to 1 percent across all items. Although item nonresponse was very low, data were imputed for all missing questionnaire data. The 20 items with missing data are listed in table A-1. The missing items included both numerical data (such as counts of teacher candidates in teacher education programs for initial licensure), as well as categorical data (e.g., yes/no questions, questions of extent).

**Table A-1. Number of cases with imputed data in the study population, by questionnaire items: 2006**

Questionnaire item	National estimate (weighted)
2G. Is applying technology in assessing achievement with respect to state curriculum standards taught? .....	1
3A. Is educational technology taught within 1- or 2-credit stand-alone courses? .....	1
3D. Is educational technology taught within content courses? .....	1
4B. To what extent are candidates taught to use technology for understanding student learning styles? .....	1
5A. To what extent is the availability of technology infrastructure in the schools a barrier? .....	1
5B. To what extent is lack of willingness of supervising teachers to integrate technology a barrier? .....	1
5C. To what extent is lack of time for supervising teachers to integrate technology a barrier? .....	1
5D. To what extent is lack of training of supervising teachers to integrate technology a barrier? .....	1
5E. To what extent are limited skills and knowledge on the part of teacher candidates a barrier? .....	1
5F. To what extent are competing priorities in the classrooms a barrier?.....	1
6. To what extent are candidates able to practice their technology skills during their field experiences?.....	1
7A. To what extent do you agree that graduates can construct project-based learning lessons? .....	3
7B. To what extent do you agree that graduates can recognize the need for adaptive technology? .....	3
7C. To what extent do you agree that graduates have the skills to integrate technology? .....	3
7D. To what extent do you agree that graduates have the experience to integrate technology? .....	3
10. During the 2005–06 academic year, how many teacher candidates were enrolled in the teacher education programs for initial licensure at your institution? .....	16
11C. Does a junior high/middle school education program for initial licensure exist at your institution?.....	1
11E. Does a special education program for initial licensure exist at your institution? .....	1
11F. Does a teacher education, multiple levels (K–12) program exist at your institution?.....	2
12. To what extent are there technology-related differences between your elementary and secondary education program? .....	1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System (PEQIS), “Educational Technology in Teacher Education Programs for Initial Licensure,” PEQIS 15, 2006.

The missing data were imputed using a “hot-deck” approach to obtain a “donor” institution from which the imputed values were derived. Under the hot-deck approach, a donor institution that matched selected characteristics of the institution with missing data (the recipient institution) was identified. The matching characteristics included control, highest level of offering, and enrollment size and whether the institution had teacher education programs for initial licensure. Once a donor was found, it was used to derive the imputed values for the institution with missing data. For categorical items, the imputed value was simply the corresponding value from the donor institution. For numerical items, the imputed value was calculated by taking the donor’s response for that item and dividing that number by the total number of students enrolled in the donor institution. This ratio was then multiplied by the total number of students enrolled in the recipient institution to provide an imputed value. All missing items for a given institution were imputed from the same donor whenever possible.

## **Data Reliability**

Sampling errors were not computed, because the survey was based on a census rather than a sample. Further, because the study was based on a census, it was not necessary to estimate sampling variability of the estimates and to test for statistically significant differences between estimates. Although nonresponse weighting adjustments were used to correct for unit nonresponse, such adjustments were minimal, given the high survey response rate (95 percent).

While the “Educational Technology in Teacher Education Programs for Initial Licensure” survey was designed to minimize nonsampling error, estimates produced from the data collected are subject to this type of error. Nonsampling error is the term used to describe variations in the estimates that may be caused by population coverage limitations and data collection, processing, and reporting procedures. The sources of nonsampling errors are typically problems like unit and item nonresponse, differences in respondents’ interpretations of the meaning of questions, response differences related to the particular time the survey was conducted, and mistakes made during data preparation.

It is difficult to identify and estimate either the amount of nonsampling error or the bias caused by this error.<sup>7</sup> To minimize the potential for nonsampling error, this study used a variety of procedures, including a pretest of the questionnaire with individuals at postsecondary institutions deemed to be the most knowledgeable about educational technology in the teacher education programs for initial licensure at their institutions. The pretest provided the opportunity to check for consistency of

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<sup>7</sup> Reliability analyses were not conducted.



interpretation of questions and definitions and to eliminate ambiguous items. The questionnaire and instructions were also extensively reviewed by NCES and the data requestor at the Office of Educational Technology. In addition, manual and machine editing of the questionnaire responses were conducted to check the data for accuracy and consistency. Institutions with surveys with missing or inconsistent items were recontacted by telephone to resolve problems. Data were keyed with 100 percent verification for surveys received by mail, fax, or telephone.

## **Definitions of Analysis Variables**

- **Institution control:** public, private not-for-profit, private for-profit. In this report, private for-profit institutions are distinguished from private not-for-profit institutions, because there was evidence in the data that these types behave differently with respect to educational technology in teacher education programs for initial licensure. However, while findings for private for-profit institutions are presented in the report tables, they are not discussed in report text, since there were too few institutions of this type to justify generalization and comparisons with other control types.
- **Size of institution:** less than 3,000 students, 3,000 to 9,999 students, and 10,000 or more students.
- **Types of programs:** elementary and secondary education program, elementary but no secondary education programs, secondary but no elementary education programs, other program types but no elementary or secondary education programs. This analysis variable was derived from responses to question 11 of the survey. Again, while findings for institutions with other program types but no elementary or secondary education programs are presented in tables, they are not discussed in the text due to the small number of institutions that compose this category.

## **Contact Information**

For more information about the survey or the Postsecondary Education Quick Information System, contact Bernard Greene, Early Childhood, International, and Crosscutting Studies Division, National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, 1990 K Street, NW, Washington, DC 20006; e-mail: [bernard.greene@ed.gov](mailto:bernard.greene@ed.gov); telephone (202) 502-7348.

# **Appendix B**

## **Questionnaire**

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U.S. DEPARTMENT OF EDUCATION NATIONAL CENTER FOR EDUCATION STATISTICS WASHINGTON, D.C. 20006-5651  <b>EDUCATIONAL TECHNOLOGY IN TEACHER EDUCATION PROGRAMS          FOR INITIAL LICENSURE</b>  POSTSECONDARY EDUCATION QUICK INFORMATION SYSTEM	FORM APPROVED O.M.B. No.: 1850-0733 EXPIRATION DATE: 09/2006
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This survey is authorized by law (P.L. 103-382). While participation is voluntary, your cooperation is critical to make the results of this survey comprehensive, accurate, and timely.

**Definition and Instructions**

For this survey, please answer with respect to your institution's teacher education program or programs as they relate to preparing students to become PK-12 teachers. While the program(s) may be for undergraduate, post-baccalaureate, and/or graduate students, **include only programs that are for initial licensure.** (Applicable sections of the survey should be completed regardless of whether your institution has teacher education programs for initial licensure.)

Please answer as broadly as possible across **all** programs for initial licensure of PK-12 teachers at your institution. However, if information is not available about some programs (for example, because they are located outside of your school, college, or department of education), then answer across those programs for which information is available.

Educational technology refers to the full range of electronic digital technologies—including computer productivity tools, multimedia, telecommunications, and educational software—as applied in curriculum and instruction in your program(s).

The survey is designed to be completed by the person or persons most knowledgeable about your teacher education program(s) for initial licensure *and* the role of educational technology within them. This person might be a faculty member who teaches courses in educational technology within the program(s) and is familiar with the program(s) more broadly, or perhaps a director of teacher education programs familiar with how teacher candidates are being prepared to use educational technology.

**Please fill in the following information:**

Name of person completing form: \_\_\_\_\_ Telephone: \_\_\_\_\_

Title/position: \_\_\_\_\_ E-mail: \_\_\_\_\_

Name of institution: \_\_\_\_\_

Best days and times to reach you (in case of questions): \_\_\_\_\_

**THANK YOU. PLEASE KEEP A COPY OF THIS SURVEY FOR YOUR RECORDS.**

<b>PLEASE RETURN COMPLETED FORM TO:</b>  <b>Mail:</b> Brian Kleiner (8096.07.03) Westat 1650 Research Boulevard Rockville, Maryland 20850-3195  <b>Fax:</b> 800-254-0984	<b>IF YOU HAVE ANY QUESTIONS, CONTACT:</b>  Brian Kleiner at Westat 800-937-8281, ext. 4469 or 301-294-4469 E-mail: BrianKleiner@westat.com
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According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information is 1850-0733. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collected. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: U.S. Department of Education, Washington, D.C. 20202-4651. If you have comments or concerns regarding the status of your individual submission of this form, write directly to: National Center for Education Statistics, 1990 K Street, N.W., Washington, D.C. 20006

For this survey, please answer with respect to your institution's teacher education program or programs as they relate to preparing students to become PK–12 teachers. While the program(s) may be for undergraduate, post-baccalaureate, and/or graduate students, **include only programs that are for initial licensure.**

Please answer as broadly as possible across **all** programs for initial licensure of PK–12 teachers at your institution. However, if information is not available about some programs (for example, because they are located outside of your school, college, or department of education), then answer across those programs for which information is available.

1. Does your institution have **any** teacher education programs for initial licensure that prepare students to become PK–12 teachers?

Yes ..... 1 (*Continue with question 2.*)      No ..... 2 (*Stop. Complete respondent section on front and return questionnaire.*)

2. Please indicate whether the following topics and practices are taught in your teacher education program(s) for initial licensure. (*If you are reporting about only one teacher education program for initial licensure at your institution, and you are answering in the affirmative, then select "Yes, in all programs."*)

Technology-related topic or practice	Taught in the program(s)		
	Yes, in all programs	Yes, in some programs	No
<i>(Circle one on each line.)</i>			
a. Using multimedia digital content (e.g., digital audio or video) for instruction.....	1	2	3
b. Using content-specific software tools for instruction (e.g., graphic organizers, interactive math programs, graphing tools, computer-assisted instructional software).....	1	2	3
c. Using Internet resources and communication tools for instruction (e.g., accessing education materials, online discussion forums, virtual field trips).....	1	2	3
d. Integrating technology into instruction.....	1	2	3
e. Creating or using digital portfolios.....	1	2	3
f. Developing curriculum plans that include using technology to address content standards.....	1	2	3
g. Applying technology in assessing student achievement with respect to state curriculum standards.....	1	2	3
h. Using technology to access or manipulate data to guide instruction.....	1	2	3
i. Using student assessment and evaluation strategies that involve technology (e.g., real-time feedback on assessments, databases that link standards with instructional resources and strategies) ..	1	2	3
j. Teaching via distance learning.....	1	2	3

3. How is educational technology taught within your teacher education program(s) for initial licensure? (*Circle one on each line.*)

	Yes	No
a. Within 1- or 2-credit stand-alone course(s) in educational technology.....	1	2
b. Within 3- or 4-credit stand-alone course(s) in educational technology.....	1	2
c. Within methods course(s).....	1	2
d. Within content course(s).....	1	2
e. Within the field experiences of teacher candidates.....	1	2
f. Other ( <i>specify</i> ).....	1	2

4. To what extent are teacher candidates taught to use technology tools for each of the following purposes? (Circle one on each line.)

	Not at all	Minor extent	Moderate extent	Major extent
a. Enhancing or enriching classroom instruction .....	1	2	3	4
b. Understanding individual student learning styles.....	1	2	3	4
c. Assessing individual student progress and challenges .....	1	2	3	4
d. Designing instructional interventions to individualize student instruction.....	1	2	3	4

5. Please indicate the extent to which the following act as **barriers** to the ability of teacher candidates to practice their educational technology-related skills and knowledge *during their field experiences*. (See question 2 for examples of educational technology-related skills and knowledge.) (Circle one on each line.)

	Not at all	Minor extent	Moderate extent	Major extent	Don't know
a. Availability of technology infrastructure in the schools .....	1	2	3	4	5
b. Lack of willingness of supervising teachers to integrate technology in their classrooms.....	1	2	3	4	5
c. Lack of time for supervising teachers to integrate technology in their classrooms.....	1	2	3	4	5
d. Lack of training or skill of supervising teachers to integrate technology in their classrooms.....	1	2	3	4	5
e. Limited skills and knowledge on the part of teacher candidates .....	1	2	3	4	5
f. Competing priorities in the classrooms .....	1	2	3	4	5
g. Other barrier(s) ( <i>specify</i> ) .....	1	2	3	4	5

6. In general, *during their field experiences*, to what extent are teacher candidates able to **practice** the technology-related skills and knowledge they acquire in their coursework? (Circle only one.)

Not at all.....	1
Minor extent .....	2
Moderate extent.....	3
Major extent .....	4
Varies too much from school to school to generalize .....	5
Don't know .....	6

7. Please indicate the extent to which you agree or disagree with the following statements as they relate to graduates from your teacher education program(s) for initial licensure. (Circle one on each line.)

	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
a. Program graduates can construct project-based learning lessons in which students use a range of educational technologies .....	1	2	3	4
b. Program graduates are able to recognize when a student with special needs may benefit significantly by the use of adaptive/assistive technology .....	1	2	3	4
c. Program graduates have the <i>skills</i> to integrate technology into instruction in their classrooms.....	1	2	3	4
d. Program graduates have the <i>experience</i> to integrate technology into instruction in their classrooms .....	1	2	3	4

8. Please indicate the extent to which the following act as **barriers** to your program's ability to integrate educational technology into the daily teaching and learning environment of teacher candidates. (*Circle one on each line.*)

	Not at all	Minor extent	Moderate extent	Major extent
a. Your school, college, or department's educational technology infrastructure .....	1	2	3	4
b. Faculty members' lack of interest in integrating technology into their teaching.....	1	2	3	4
c. Faculty members' lack of training to use technology in their own classrooms .....	1	2	3	4
d. Faculty members' lack of time for training and developing their technology skills .....	1	2	3	4
e. Teacher candidates' lack of interest in using technology .....	1	2	3	4
f. Other barrier(s) ( <i>specify</i> ) _____	1	2	3	4

9. Are the following professional development or training opportunities available to faculty who teach in the teacher education program(s)? (*Circle one on each line.*)

	Yes	No
a. Use and application of educational technologies.....	1	2
b. Development of curricula that integrate educational technologies into courses they teach .....	1	2
c. Teaching methods for distance education courses .....	1	2
d. Other training opportunities relating to educational technology ( <i>specify</i> ) _____	1	2

10. During the 2005–06 academic year, how many teacher candidates were enrolled in the teacher education program(s) for initial licensure at your institution?

\_\_\_\_\_ Number of teacher candidates

11. Please indicate the types of teacher education programs for initial licensure of PK–12 teachers that most closely match those that exist at your institution. (*Circle one on each line.*)

	Yes	No
a. Early childhood education .....	1	2
b. Elementary education .....	1	2
c. Junior high/middle school education.....	1	2
d. Secondary education .....	1	2
e. Special education .....	1	2
f. Teacher education, multiple levels (K–12) .....	1	2
g. Teacher education in specific subject areas (e.g., second language education, art education, reading, mathematics) .....	1	2
h. Other programs for initial licensure ( <i>specify</i> ) _____	1	2

12. To what extent are there differences between your institution's elementary and secondary education programs for initial licensure with respect to the educational technology training for teacher candidates? (*Circle only one.*)

- Not at all..... 1
- Minor extent..... 2
- Moderate extent..... 3
- Major extent..... 4
- Not applicable (e.g., no elementary or secondary program for initial licensure)..... 5

**Thank you. Please keep a copy for your records.**