Teacher Education and Technology Planning Guide

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Introduction

Technologies can provide powerful tools for student learning, but their value depends upon how effectively teachers use them to support instruction. Education leaders agree that all new teachers must graduate from teacher education programs with the knowledge and skills that will allow them to integrate technology easily and effectively into their daily teaching, whatever the setting. Many do. Nonetheless, far too many teacher candidates graduate without adequate exposure to, or experience with, effective teaching with technology. Even the best of teacher education programs need to continually review and renew their programs to ensure they are responsive to changing expectations for teachers and to make sure the programs take advantage of the opportunities offered by ever more powerful technologies for teaching and learning. Without a strong foundation in the knowledge and skills for using technology effectively, teacher candidates entering today's schools will fall short of meeting the "highly qualified teacher" expectations set out by the No Child Left Behind (NCLB) Act (2002). This is a national problem but one that appears to be particularly severe in urban and rural schools that have difficulty attracting and retaining high-quality teachers.

The North Central Regional Educational Laboratory (NCREL) at Learning Point Associates recently completed a series of case studies of university education departments that emphasize effective use of educational technology in their programs, and have been successful in placing new teachers into urban and rural environments (Fulton, Glenn, & Valdez, 2003; and Fulton, Glenn, Valdez, & Blomeyer, 2002). These NCREL case studies sought to provide insight into the following questions:

- How are teacher education programs, particularly those in urban and rural settings, organized to support teacher candidates' learning with and about technology?
- Do candidates planning to teach in urban and rural schools receive teacher preparation that focuses on getting them ready to work effectively in these settings?
- How do school partnerships affect teacher learning with technology in urban and rural environments?

Although answers to these questions are complex and nuanced by the particular conditions of each institution and its PK–12 partners, common thematic elements were identified among the institutions studied. These commonalities have been extracted to eight key categories for assessing the readiness levels of teacher education programs to ensure that their students graduate with the knowledge, skills, and predispositions for teaching effectively with technology in any setting. The eight categories are vision; leadership; faculty use of technology; teacher candidates' use of technology; funding for technology resources, training, and support; collaboration with arts and sciences; PK–12 partnerships; and meeting external mandates.

These eight elements form the basis of the *Teacher Education and Technology Planning Guide*. The purpose of the guide is to provide a framework that will assist educators in reviewing and discussing progress in integrating technology throughout teacher education programs so they can adjust activities and resources accordingly.

The *Teacher Education and Technology Planning Guide* can be used as an assessment, discussion guide, and planning and decision support resource for deans, department chairs, teacher education faculty, their counterparts in the arts and sciences involved in teacher preparation, and teacher education supervisors, as well as the administrators and other PK–12 school personnel with whom they partner. Like the School Technology and Readiness (STaR) charts created by the CEO Forum in the late 1990s, the guide provides support for:

- Identifying current technology profiles, setting future goals and benchmarks, and funding priorities.
- Applying for technology-related or partnership grants (clarifying indicators of readiness, areas of need, and projected strategies).
- Encouraging the creation of customized assessment tools (e.g., student and faculty surveys and skills assessments).
- Enhancing partnerships (e.g., identifying how partnerships could support technology integration across the PK–16 spectrum, and how technology could support existing partnerships).

The questions that follow are meant to be a starting point for discussion in eight key categories. The "current status" ratings serve as a means of assessing progress. Bear in mind that planning for effective use of technology in support of teacher preparation is an ongoing process, evolving as new needs arise and new resources are developed.

A resource section at the end of the guide provides an annotated list of links to useful Web sites.

Note: Throughout this document the term *college of education* refers to the schools, colleges, or departments of education within the higher education institution that are primarily responsible for the preparation of teacher candidates. *Arts and sciences* refers to other colleges or departments in the higher education institution that provide courses taken by teacher candidates.

1. Vision

Is there a clearly defined, integrated vision for the role of technology in the mission of the college of education?

Current Status

___ *The vision is central to the mission and basis for planning.*

___ *The vision statement is currently under discussion.*

___ *The vision statement is not yet under discussion.*

Questions to Consider

1. Does the vision relate to the overall mission and initiatives of the higher education institution as a whole?
2. Is there a clear statement about technology's role in teaching, research, and service?
3. Is there a plan to manage the transitions needed to move the college of education toward an integrated use of technology?
4. Is technology integrated into all programs that prepare educators for the schools?
5. Is teacher education a core component of the vision?

Other Issues, Comments, and Actions

2. Leadership

Are the academic leaders aware of, and supportive of, the vision for technology in the mission of the college of education?

Current Status

___ *Leadership is supportive and engaged in implementing the vision.*

___ *Leadership is aware of vision but not actively engaged in implementing it.*

___ *Leadership is not focused on technology's role in meeting the mission of the college.*

Questions to Consider

1. How do leaders show their support for the vision?
2. Do leaders have a plan to implement the vision within their areas?
3. Do leaders model effective use of technology in their administration, teaching, and service?
4. How do leaders support the faculty, staff, and students to use technology?
5. Do leaders seek out partnerships to enhance the use of technology in their programs?

Other Issues, Comments, and Actions

3. Faculty Use of Technology

Are faculty members integrating technologies into their teaching, research, and service?

Current Status

___ *Integration is implemented throughout the teacher education program.*

___ *Integration is implemented in the majority of the courses and school placements.*

___ *Integration is implemented in only selected courses and components of the program.*

Questions to Consider

1. Are expectations for faculty use of technology clearly stated in hiring documents and promotion and tenure criteria?
2. Is there a collegewide plan for faculty development to ensure all faculty members meet these expectations?
3. Do faculty members engage in discussions about the implications of technology on teaching, learning, assessment, and programs?
4. Are faculty members modeling the effective use of technology in their teaching and work with students and PK–12 teachers?
5. Are there incentives for faculty members to develop and share their technology expertise with others?

Are resources, training, and support provided to faculty to help them meet these expectations?

Current Status

___ *Technology resources and support are comprehensive and easily accessible to faculty and staff.*

___ *Technology resources and support are available to faculty and staff on a limited basis.*

___ *Technology resources and support are not available to faculty and staff.*

Questions to Consider

1. Is technology available for teacher education faculty and support staff, including student-teaching coordinators and student-teaching supervisors?
2. Is there a consistent training program—with both formal and informal training opportunities as needed—available to faculty and support staff, including student-teaching coordinators and student-teaching supervisors?
3. Does the college of education take advantage of technology support and training provided by the larger institution?
4. Are appropriate technology tools available to faculty and staff to enable them to create online courses and resources, use e-portfolios, and develop new software or applications for use in their research and teaching?
5. Is appropriate curriculum and technical support available to assist faculty in changing their instructional strategies?

Other Issues, Comments, and Actions

4. Teacher Candidates' Use of Technology

Are there clearly stated guidelines regarding technology competencies that students are expected to achieve in their programs?

Current Status

___ *Student technology competencies are defined and assessed throughout the teacher education program.*

___ *Student technology competencies are defined and assessed in coursework, but not in school placements.*

___ *Student technology competencies are not yet defined and assessed.*

Questions to Consider

1. Are student expectations consistent with national technology standards?
2. Are students expected to utilize a wide range of technology throughout their preparation program?
3. Are students evaluated by the college of education for their technology expertise?
4. Are students assessed on their ability to integrate technology during their school placements?
5. Are e-portfolios used at selected points during the candidate's program to assess performance?

Are sufficient technology resources, training and support provided to students to meet these expectations?

Current Status

___ *Technology resources and support are comprehensive and easily accessible to students.*

___ *Technology resources and support are available to students on a limited basis.*

___ *Technology resources and support are not available to students.*

Questions to Consider

1. Does the college of education have a technology specialist on staff to assist students with their needs?
2. Is there a technology resource center where students may seek assistance with both technical and curriculum questions?
3. Are students able to utilize technologies in and out of their classes?
4. Are students regularly asked about their technology needs?
5. Are classrooms configured to enable students to demonstrate their ability to utilize technology?

Other Issues, Comments, and Actions

5. Funding for Technology Resources, Training, and Support

Is there a budget line within the college, and at the department level, devoted to technology purchases, training, and support, with a budgetary system in place to monitor expenditures?

Current Status

___ *A budget line-item is in place and regularly monitored.*

___ *A budget line-item is under discussion.*

___ *A budget line-item is not yet under consideration.*

Questions to Consider

1. Is this budget consistent with the vision and technology plan?
2. How is the budget developed, and who manages it?
3. Is the budget revised regularly in light of changing needs and resources?
4. Is the budget inclusive of all technologies used for teaching, research, and service?
5. Is there a systematic replacement plan for technology hardware and software?

Is there a system to determine funding priorities related to technology and a plan for seeking external support from all possible funding sources (e.g., national, state, and local governments; businesses; foundations; and alumni)?

Current Status

___ *External funding for technology is aggressively sought and secured.*

___ *Planning is in place for seeking external funding for technology.*

___ *There is no plan for external funding for technology.*

Questions to Consider

1. Are there partnerships with technology hardware and software companies that offer university and individual discounts on purchases?
2. Have relationships been cultivated with foundations and other funding sources (especially locally based ones) that have been supportive of technology initiatives in the past and are likely supporters for future goals?
3. Has background work been put into place to expedite the grant-writing and funding-solicitation process?
4. Have marketing materials been developed that document past and present technology successes?
5. Have funds been identified that could be used as necessary matches required for many proposals?

Other Issues, Comments, and Actions

6. Collaboration With Arts and Sciences

Is there cooperation across the college of education and the college of arts and science regarding technology integration in areas of shared interest in content areas?

Current Status

___ *There is formal collaborative planning and design of programs and courses impacting teacher candidates.*

___ *There are informal collaborations on some programs or courses impacting teacher candidates.*

___ *There is no collaboration***.**

Questions to Consider

1. Is there a formal organization that brings together teacher educators and arts-and-sciences faculty to discuss issues of teacher preparation on a regular basis?
2. What role does technology play in these discussions?
3. Do faculty share expertise in utilizing technology in teaching, research, and outreach?
4. Do partnerships in PK–12 schools involve faculty from the college of arts and sciences?
5. Are the arts-and-sciences faculty included in external grants and funding opportunities?

Other Issues, Comments, and Actions

7. PK–12 Partnerships

Do partnerships with PK–12 schools build on a jointly articulated vision of teaching and learning that includes the effective use of technology as a means to address the challenges of teaching with diverse student populations and in schools in which large numbers of students are at risk of educational failure?

Current Status

___ *A jointly articulated vision is central to the PK–12 partnerships.*

___ *There is some correspondence of visions, but it is not central to PK–12 partnerships.*

___ *There is no jointly articulated vision with PK–12 partners.*

Questions to Consider

1. Is there a formal coordinating board that facilitates planning, collaboration, and related activities?
2. What role does technology play in this board's vision and agenda?
3. Do school partnerships provide opportunities for faculty and K–12 educators to learn from each other about effective technology-integration strategies in teaching?
4. Do the higher education and K–12 schools work together in soliciting external grants to support their common goals?
5. Is the college of education working with PK–12 partners to address issues of digital equity and student achievement?

Are opportunities provided for teacher education students to observe or engage in student teaching and internships in schools and classrooms that expose them to diverse educational settings and a variety of ways modern technologies can be used to support instruction in the classroom?

Current Status

___ *Partnerships with a strong focus on technology and experience with diverse student populations are central to the mission.*

___ *Partnerships may include some attention to technology or experience with diverse student populations.*

___ *Partnerships do not focus on technology or experiences with diverse student populations.*

Questions to Consider

1. Are there clear expectations for PK–12 partner schools regarding the use of technology as part of instruction?
2. Are supervising and cooperating teachers selected because of their expertise on integrating technology into instruction?
3. Does the higher education institution provide resources to partnership schools to improve the opportunities for teacher candidates to observe or work with learning technologies in the classroom, especially in high-need schools?
4. Are teacher candidates given access to technologies they can take with them (e.g., loaners, mobile labs) to supplement classroom technology resources?
5. Are teacher candidates assessed by PK–12 and higher education supervisors regarding the integration of technology into instruction and their abilities to teach diverse students?

Are teacher education graduates followed into their teaching careers, especially in partner schools?

Current Status

___ *Progress and retention rates of graduates are tracked and the data are used to renew programs, with support provided to recent graduates as needed.*

___ *There is an informal follow-up with graduates, but no support or formal feedback for program design.*

___ *There is no follow-up with graduates.*

Questions to Consider

1. Are the placement and retention rates of teaching graduates monitored?
2. Does the institution gather data regarding the effectiveness of graduates based on student-achievement measures?
3. Do graduates have an opportunity to receive follow-up support once they enter the profession?
4. Are data gathered from graduates and used in the review process of programs?
5. Are new technologies, such a Web portals and video conferencing used to communicate with, and assist, graduates?

Other Issues, Comments, and Actions

8. Meeting External Mandates

Is there a procedure for monitoring, discussing, and addressing local, state, and national mandates and standards that impact education at the PK–12 and higher education levels?

Current Status

___ *There is collaboration (including arts and sciences faculty) across the PK–16 spectrum to meet standards and educational requirements.*

___ *Some discussion occurs in various programs, but not across the full PK–16 spectrum regarding standards and educational requirements*.

___ *There is no discussion within the institution or with local school partners regarding standards and educational requirements.*

Questions to Consider

1. Are technology expectations for faculty, students, and programs based on accepted local, state, and national standards?
2. Who coordinates and monitors compliance with local, state, and national standards?
3. Are assessment procedures in place to determine whether or not standards are being met?
4. What documentation is available to demonstrate effectiveness in meeting the standards?
5. How do these collaborations around standards impact the design and revisions to the preservice program?

Other Issues, Comments, and Actions

References

Fulton, K., Glenn, A. D., & Valdez, G. (2003). *Three preservice programs preparing tomorrow's teachers to use technology: A study in partnerships.* Retrieved November 16, 2004, from http://www.ncrel.org/tech/preservice/

Fulton, K., Glenn, A. D., Valdez, G., & Blomeyer, R. (2002). *Preparing technology-competent teachers for urban and rural classrooms: A teacher education challenge.* Retrieved November 16, 2004, from http://www.ncrel.org/tech/challenge/

No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2002). Retrieved November 16, 2004, from http://www.ed.gov/policy/elsec/leg/esea02/index.html

Appendix:
Teacher Preparation Resource Web Sites

ALN Web Center Version 3.0
www.alnresearch.org/index.jsp
This site is an excellent resource for drawing upon research in the field and discussions by Asynchronous Learning Networks (ALN) participants. It is also a clearinghouse of relevant knowledge and materials.

Busy Teachers' Web Site / Computer Technology
www.ceismc.gatech.edu/busyt/comp.shtml
This resource site has value for the PK–16 community on a variety of topics.

Center for Applied Research in Educational Technology (CARET)
caret.iste.org
This research-friendly site provides ready access to a number of planning and implementation issues.

The Concord Consortium
www.concord.org
This site provides technology resources for teachers and teacher educators, and provides good examples of focused instructional research projects.

Council on Technology Teacher Education (CTTE)
teched.vt.edu/ctte/CTTEMain.html
This specialized site focuses on the preparation of technology educators.

The Digital Equity Toolkit
nici-mc2.org/de_toolkit/pages/toolkit.htm
This toolkit points educators to free and inexpensive, high-quality resources that help address the digital divide in the classroom and the community.

Journal of Technology and Teacher Education (JTATE)
www.aace.org/pubs/jtate/default.htm
This site has considerable activity and is of considerable interest among faculty for presenting their research at the Society for Information Technology and Teacher Education (SITE). It also has a useful index of past journal issues.

National Commission on Teaching and America's Future (NCTAF)
www.nctaf.org
This site has links to a number of resources on teacher-quality issues, including research and papers.

National Standards for Technology in Teacher Preparation
www.iste.org/standards/ncate/index.cfm
This site helps readers understand skills and knowledge needed by teachers and teacher educators.

National Council for Accreditation of Teacher Education (NCATE)
www.ncate.org/index.htm
This site helps inform teacher-preparation programs about the accreditation process.

North Central Regional Educational Laboratory (NCREL) / Technology in Education
www.ncrel.org/tech/
This site has timely information and offers a good blend of policy, practice, planning tools, and research reports.

Preparing Tomorrow's Teachers to Use Technology (PT3)
www.pt3.org/resources.php
This site is the official repository of the PT3 and offers access to project descriptions, models, and related resources.

SEIR*TEC / Technology Planning for Teacher Education
www.itrc.ucf.edu/other/seirtec/tech_plan.htm
This site provides information about curriculum and instruction, leadership for technology, policy, and planning and evaluation.

Technology Across Learning Environments for New Teachers (TALENT)
talent.ed.uiuc.edu/site_2004.asp
A PT3 grant site at the University of Illinois at Urbana-Champaign. It includes links to national organizations.

The Teacher Tap: Professional Development Resources for Educators
www.eduscapes.com/tap/
This site has a number of useful links to tools with emphasis on classroom applications.

Teaching With Electronic Technology
www.wam.umd.edu/~mlhall/teaching.html
This eclectic site has some interesting and often slightly offbeat readings organized into categories.

TechLEARNING
techlearning.com
This site contains articles and resources appropriate for teachers, technology people, and administrators.