COURSE SYLLABUS
TIE 535 – Instructional Design for Integrating Technology Across the Curriculum

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TERM: AUSL program, Summer 2011
SEMESTER HOURS: 3
COURSE DELIVERY: Blended

PROGRAM MISSION: The mission of the Technology in Education Program is to prepare technology specialists who can effectively integrate technology across the curriculum as well as facilitate the effective use of technology by other educators.

Course description:
This course introduces participants to the systems approach to instructional design. The major component of instructional development models will be presented, with an emphasis on applying technology to instruction. This course provides introductory information and application of skills and techniques necessary in the Analysis, Designing, Development, Implementation, and Evaluation of instruction (ADDIE framework). This course will consider these issues at both the curricular (macro) and lesson (micro) level.

Prerequisite(s):
TIE 500 or evidence of meeting the National Educational Technology Standards for Teachers (NETS-T) as approved by the TIE Program Director. Non-TIE majors who wish to register for this course must have prior permission of instructor.

Relationship to specific NLU program(s):
TIE 535 is a required course in the Technology in Education (TIE) program meeting both Illinois (Technology Specialist) and International Society for Technology in Education (ISTE) Technology Facilitator Standards for Technology in Education Advanced programs.

Course goals and expected student learning outcomes: By the end of this course, the student will be able to:
• Examine a variety of pedagogical approaches that support the integration of technology into the curriculum and are designed to meet the needs of all learners. (TS 1G, TS-1H, TF- III B )
• Explore a range of instructional frameworks for using technology in the classroom. (TS-5A, TS-5C, TF-II.E. 1)
• Designs and implements lessons, which integrate computer use and other technologies into the curriculum to improve instructional effectiveness. ( TS-7A, TS-7B, TS-12D, TF-ILA 3., TF-II.C)
• Demonstrate how technology tools can be used to provide for individual differences among students of varying ability levels. (TS-3F, TS-7G, TF-II.A., TF-VI.B. 1,2)
• Link designed lessons to state learning standards and the NETS standards. (TS-4.A.,D., TS-8A, TF-II.C. 1,2)
• Explore a variety of strategies that assess learning involving the use of technology. (TS-1N, TF-IV.A. 1,2)
• Design appropriate assessment materials for learning experiences that consider content and technology competencies. (TS – 1N, TF-IV.A. 1)
• Understand the importance of legal, ethical and responsible use of technology resources. (TS –10, TF-VI.A.)
• Uses research to support the use of a variety of pedagogical approaches and the ways in which they link to the use of technology as a curricular tool. ( TF- III E )
• Design a professional development component to introduce the unit and lesson created in benchmark project and support teacher's use of unit/lessons developed. (TS-1M, TS– 9; TS-12A, TS-12B, TF – II.B, TF-IIIE1., TF-IV.A. 2.)
• Understand the importance of communicating with stakeholders (classroom teachers and administrators) groups in order to improve student learning. (TS-12A,E, TF-V.D.)
• Identify resources for a professional library that will support technology facilitators and specialists in their own professional growth as well as in the work to support others. (This is part of an ongoing portfolio (TIE 592) requirement across courses) (TF –VIIC)
• Candidates demonstrate a high standard of professional ethics by: cultivating curiosity and excitement for learning in themselves and others, and using information from self and others to continuously improve.

( ISBE: Technology Specialist (TS) ISTE: Technology Facilitator Standards (TF))

Major topics:
1 Design Models
• Existing instructional systems design models
• Process of instructional systems design
• Current models of ISD based on the traditional reference provided by Andrews and Goodson (1980)
• Process to conduct an instructional analysis including the learning context, the learning tasks, and the learner
• Assessment approaches appropriate to the achievement targets established through performance objectives
• Instructional strategies based on the appropriate Conditions of Learning and the Events of Instruction
• Appropriate media for a given strategy based on the Conditions of Learning.
• Instructional strategies using an appropriate evaluation technique

2 Critical Theory
• Critical theories that form the underpinnings of instructional systems design models
• Major theory bases contributing to instructional systems
• Models of learning including behaviorist, cognitive, and constructivist models
• Instructional theories and models that prescribe characteristics of instruction to support learning. Highlight the contributions of Bloom's Model of Mastery Learning; Keller's ARCS Model of Motivation; and Gagne's theory on the Conditions of Learning
• Systems theory and ISD and how systems theory relates to the waterfall model in instructional systems
• Major concepts from communications theory and the contributions that communications theory has made to ISD
3 Application of Theories and Models into Practice
   • Theories and models for the design, development, and evaluation of an instructional products
   • Analysis, design, development, implementation, and evaluation of print-based products

4 Extending Existing Models
   • Design models in relations to how they may change based on new developments in instructional technology
   • Concurrent design concepts incorporated into existing design practices
   • Concepts of hypertext and information access and how they can effect the design of instruction

Attendance:
Attendance is important to the accomplishment of university curriculum objectives. Regular attendance, active participation and preparedness in all classes and seminars is required. In case of an unexpected emergency, contact the instructor in writing (email) and if possible, in advance of the seminar or class being missed, and an alternate assignment will be required based on the instructor’s policy. Students who miss more than one class or seminar may not be able to fulfill the requirements for passing the course and may have to withdraw. An unexcused absence may result in a lowering of the final grade, for example two or more missed weeks will result in a 10% final grade deduction per class missed.

Online and Blended Course Attendance
If you have a course that meets online, there are lab resource days scheduled for you to use computer labs on campus to finish the coursework. The online courses have start and stop dates just like a regular face to face class, so please don’t put things off thinking that, because they’re online, there’s no deadlines. Use the time available to you to finish your work in the course of your school day.

Coursework
Assignments are due on time, and collegiate quality of written work is expected. Considerations for late submissions should be arranged in advance with the instructor and may not receive full credit without prior consent of the instructors. All work must be typed, 12pt. font, double spaced, and be grammatically and mechanically correct. Instructors may place additional requirements on coursework. Students will be notified as soon as possible if performance on any of the classroom expectations needs improvement or falls below the passing level.

Expectations for All Written Material:
All written material will be error-free (grammar and style), indicating quality, well-planned work by the student. Errors will result in deductions of points from assignments. Use the latest APA for stylistic questions.

NLU Policy on Academic Honesty
With respect to the academic honesty of students, it is expected that all material submitted as part of any class exercise, in or out of class, is the actual work of the student whose name appears on the material or is properly documented otherwise. The concept of academic honesty includes plagiarism as well as receiving and/or giving improper assistance and
other forms of cheating on coursework. Students found to have engaged in academic dishonesty are subject to disciplinary action and may be dismissed from the University.

Faculty has the right to analyze and evaluate students' course work. Students may be asked to submit their papers electronically to a third-party plagiarism detection service. Students who are asked to submit their papers, and refuse, must provide proof for every cited work comprising the cover page and first cited page for each source listed in the bibliography. When evidence of academic dishonesty is discovered, an established procedure of resolution will be activated to bring the matter to closure.

The Policy on Academic Honesty is in the University Catalog as a hard copy and online at [http://www.nl.edu/registrar/catalogs.cfm](http://www.nl.edu/registrar/catalogs.cfm) and in the Student Guidebook as a hard copy and online at [http://www.nl.edu/StudentServices/studentaffairs/StudentHandbook/](http://www.nl.edu/StudentServices/studentaffairs/StudentHandbook/). For resources on how to cite properly and avoid plagiarism, go to NLU's Center for Academic Development at [http://www.nl.edu/centers/cad/resources/index.cfm](http://www.nl.edu/centers/cad/resources/index.cfm) and the NLJ Library at [http://www.nl.edu/library/](http://www.nl.edu/library/). For an interactive tutorial on how to avoid plagiarism, go to [http://faculty.nl.edu/cad/presentations/Student%20Plagiarism%20tutorial.htm](http://faculty.nl.edu/cad/presentations/Student%20Plagiarism%20tutorial.htm).

**Late Assignments:**
Late assignments will be penalized 10% of the total number of possible points for each week (starting the day after the due date) the assignment is over due.

**Incompletes/In-Progress**
Due to the accelerated nature of the Residency program, Incomplete/In-progress grades are highly discouraged. In instances of actual emergency an In progress grade may be appropriate after a conversation with your instructor, but receiving an In Progress grade should be avoided and can only be given if 75% of the work of the course is completed, and will only be given by the discretion of the Instructor. This is not a traditional program and courses cannot be dropped and completed later without impacting your degree and certification status.

**Cell Phone and Laptop Use**
Please mute all cell phones. Laptops may be used for note taking and for in class projects. There may be "laptop down" times requested by the instructor. In class texting is discouraged except in extreme circumstance.

**Social Networking During Class**
Refrain from accessing unnecessary online resources during class. Do not update statuses, comment on classroom activities, colleagues, or course content online during class. If you are using a smartphone, laptop, tablet, or computer in class, it is expected that you are only doing academic work at that time. Instructors may request ‘screen free’ times during class.

**Dispositional Behaviors**
The cohort model is an intentional construction of a learning group for a desired outcome. As part of a cohort the expectation is that students take part in group assignments and
projects, build a sense of support and community, and contribute intellectually to the growth of the group as well as the individual. Dissent and discontent can happen in a cohort but it should be managed respectfully and professionally. This expectation of civility, respect, and involvement includes outside of classroom behaviors and online interactions. Also, prompt arrival to class, participating, and staying for the duration of class is an expectation.

NLU Accessibility Policy:

Please Note: National-Louis University is committed to ensuring that all of its facilities and programs are accessible to all persons. If you believe you may qualify for course adaptations or accommodations in accordance with the Americans with Disabilities Act and/or Section 504 of the Rehabilitation Act, it is your responsibility to immediately, but no later than the second class session to contact the Office of Diversity, Access and Equity (DAE Office) or the instructor. You may contact the Director of Diversity and Equal Employment at (847) 947-5491 or via e-mail at Erin.Haulotte@nl.edu. If you have coordinated services with the DAE Office, please provide your letter of accommodation to the instructor.

Required and Recommended Texts & Readings:


- Class Blackboard Site: www.nledu - portal http://serverlp1.nl.edu/cp/home/loginf

- Additional required articles and readings will be provided for students in the Blackboard course site in the Course Content section Course Readings folder.

COURSE REQUIREMENTS:

Participation: This class will be delivered in traditional face to face format as well as online, with readings and discussion postings presenting the bulk of the course work.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Discussion &amp; Participation</td>
<td>100</td>
</tr>
<tr>
<td>ADDIE design document</td>
<td>40</td>
</tr>
<tr>
<td>UBD draft document</td>
<td>45</td>
</tr>
<tr>
<td>Web 2.0 tool development projects (ongoing)</td>
<td>10 each</td>
</tr>
<tr>
<td>TPACK project</td>
<td>25</td>
</tr>
<tr>
<td>Final UBD benchmark assignment Unit</td>
<td>40</td>
</tr>
<tr>
<td>Personal reflection on ID and course content – 1 page</td>
<td>30</td>
</tr>
</tbody>
</table>

*Additional details of requirements for evaluation will be provided.

GRADING SCALE:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
</tr>
<tr>
<td>80-89%</td>
<td>B</td>
</tr>
<tr>
<td>70-79%</td>
<td>C</td>
</tr>
</tbody>
</table>

Dr. Hansen, Summer 2011
60-69%  D
Below 60%  F

Course Assignment Descriptions

- Design Document
  The Design Document explains the approach and details the plan to developing an instructional module. The purpose of this activity is to have students demonstrate the understanding of key concepts of instructional design and application to developing instructional modules.

- Prototype of Instructional Module
  Students will apply the instructional design process (from audience analysis to formative evaluation) to the prototype. The prototype will include technology tools that model effective technology integration.

- UbD template
  Each student will identify a unit of instruction from their classroom and complete the Understanding by Design template (editable version of template will be provided). This template will serve as the basis for the students final UbD unit project so select teaching content that will be delivered by student in their classroom later in the term.

- TPACK Design Diagram
  Each student will compete a TPACK diagram for their UbD template by conducting a review of content, appropriate technology, and pedagogical issues that will affect the unit. Students will provide rational for each of the three identified areas. The purpose of this project is for student to apply TPACK constructs to the design of educational units of instruction.

- Final UbD Unit
  Each student will provide a fully developed UbD based unit of instruction that can be presented in the student's classroom. The final unit will conform to the UbD Unit rubric to be provided by the instructor. The purpose of this project is for the student to apply all skills and knowledge of UbD to designing a unit of instruction that effectively integrates technology (according to ISTE NETS-T/S standards)

- Web 2.0 tools (ongoing)
  Weekly, new Web 2.0 tools will be introduced to the class. Each student will complete a sample project using the tool, either in class or completed as homework.

- Personal Reflection
  The purpose of this reflection is for the student to take an introspective look at their design habits from before the course to after course content was delivered. What changed? What were you already doing? What are the enduring understandings that you will carry forward in your career as an educator? The reflection paper should be no more then one page and no less then ¾ of a page, single-spaced with 12 PT Times New Roman font.

Working for Mastery Learning: There is always the opportunity to rework assignments to increase the number of points earned.

Course Schedule (proposed and subject to change):

<table>
<thead>
<tr>
<th>Class Date</th>
<th>Content Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting 1</td>
<td>Blackboard, Syllabus, ISD, Benchmark Assignment</td>
</tr>
<tr>
<td>June 17</td>
<td>ADDIE Model &amp; Bloom</td>
</tr>
</tbody>
</table>
### Meeting Schedule

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>June 21</td>
<td><strong>ADDIE</strong></td>
</tr>
<tr>
<td>3</td>
<td>June 28 - Online</td>
<td>Intro to UBD and Web 2.0</td>
</tr>
<tr>
<td>4</td>
<td>June 30</td>
<td>Backward Design, Understanding &amp; Essential Questions</td>
</tr>
<tr>
<td>5</td>
<td>July 12</td>
<td>Assessment &amp; Kirkpatrick Criteria &amp; Rubrics</td>
</tr>
<tr>
<td>6</td>
<td>July 14 - Online</td>
<td>TPACK &amp; Standards</td>
</tr>
<tr>
<td>7</td>
<td>July 19</td>
<td>Differentiated Instruction</td>
</tr>
<tr>
<td>8</td>
<td>July 21 - Online</td>
<td>Peer Review and discussion of UbD template</td>
</tr>
<tr>
<td>9</td>
<td>July 25</td>
<td>Web 2.0 toolathon</td>
</tr>
<tr>
<td>10</td>
<td>July 27 - Online</td>
<td>Working session / final projects</td>
</tr>
<tr>
<td></td>
<td>July 31</td>
<td>Extension Time – All projects due</td>
</tr>
</tbody>
</table>

### Representative text(s) and/or supporting resources:

- Dwight, V. (June 2000). Going the distance, *FamilyPC, 7*(6), 54.
- Dwyer, David C.; Ringstaff, Cathy; Sandholtz, Judith H. (1997). *Teaching with Technology. Creating Student-Centered Classrooms.* NY: Teachers College Press,


**Additional Resources:**


North Central Regional Educational Laboratory. (1997) *Learning with technology*. Oakbrook, Il.
Standards for the LBS II/Technology Specialist
[28.320]

STANDARD 1 – Foundations
The competent technology specialist understands the philosophical, historical, and legal foundations of special education. [28.320(a)]

Knowledge - The competent technology specialist understands:
1A. concepts and issues related to the use of technology in education and other aspects of our society.
1B. issues in diversity and assistive technology.

Performance - The competent technology specialist:
1C. articulates a personal philosophy and goals for using technology in special education.
1D. uses technology-related terminology appropriately in written and oral communication.
1E. describes legislative mandates and governmental regulations and their implications for technology in special education.

STANDARD 2 - Characteristics of Learners
The competent technology specialist understands the impact that disabilities have on the cognitive, physical, emotional, social, and communication development of an individual and provides opportunities that support the intellectual, social, and personal development of all students (ages 3-21). [28.320(b)]

2A. Knowledge - The competent technology specialist understands the impact of technology at all stages of development on individuals with exceptional learning needs.

Performance - The competent technology specialist:
2B. matches characteristics of individuals with exceptional learning needs with technology product or software features.
2C. identifies the demands placed on the user by computers, software, and related technology materials.

STANDARD 3 – Assessment
The competent technology specialist understands the educational assessment process and uses various assessment strategies to support the continuous development of all students. [28.320(c)]

3A. Knowledge - The competent technology specialist understands the use of technology in the assessment, diagnosis, and evaluation of individuals with disabilities.

Performance - The competent technology specialist:
3B. uses technology to collect, analyze, summarize, and report student performance data to aid instructional decision-making.
3C. identifies functional needs, screens for functional limitations, and determines if the need for a comprehensive assistive or instructional technology evaluation exists.
3D. monitors outcomes of technology based interventions and reevaluates and adjusts the system as needed.
3E. assists individuals with disabilities in clarifying and prioritizing functional intervention goals regarding technology based evaluation results.
3F. works with team members to identify assistive and instructional technologies that can help individuals meet the demands placed upon them in their environments.
3G. identifies placement of devices and positioning of the individual to optimize the use of assistive or instructional technology.
3H. examines alternative solutions and trial periods with potential assistive or instructional technologies prior to making a purchase decision.
3I. makes technology decisions based on a continuum of options ranging from no technology to high technology.

STANDARD 4 - Planning for Instruction

The competent technology specialist understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners. The specialist understands instructional planning and designs instruction based on knowledge of the discipline, students, community, and curriculum goals. [28.320(d)]

4A. Knowledge - The competent technology specialist understands procedures for evaluating computer software and other technology materials for their potential application in special education.

Performance - The competent technology specialist:
4B. identifies elements of the curriculum for which technology applications are appropriate and ways they can be implemented.
4C. identifies and operates software that meets educational objectives for individuals with disabilities' learning needs in a variety of educational environments.
4D. identifies and operates instructional and assistive hardware, software, and peripherals.
4E. designs, fabricates, and installs assistive technology materials and devices to meet the needs of individuals with disabilities.
4F. provides consistent structured training, according to individuals with disabilities' needs to operate instructional and adaptive equipment and software, until mastery is achieved.
4G. verifies proper implementation of mechanical and electrical safety practices in the assembly and integration of the technology to meet the needs of individuals with disabilities.
4H. instructs others in the operation, maintenance, and warranties of the technology and trouble-shooting techniques that may be needed.
4I. uses communication technologies to access information and resources electronically.
4J. develops and implements contingency plans in the event that assistive or instructional technology devices fail.

STANDARD 5 - Learning Environment

The competent technology specialist uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation. [28.320(e)]

Knowledge - The competent technology specialist understands:
5A. funding sources and processes for the acquisition of assistive technology devices and services.
5B. national and state pre-kindergarten through grade 12 technology standards.
5C. procedures for the organization, management, and security of technology.
5D. ergonomic principles to facilitate the use of technology.

Performance - The competent technology specialist:
5E. evaluates features of technology systems.
5F. develops clear specifications and/or drawings necessary for technology acquisitions.
5G. writes proposals to obtain funds for technology hardware and software.
5H. provides technology support to students who are receiving instruction in general education classrooms.

STANDARD 6 - Collaborative Relationships

The competent technology specialist uses knowledge of effective written, verbal, and visual communication techniques to foster active inquiry, collaboration, and supportive interaction among professionals, parents, paraprofessionals, and students. [28.320(f)]

Knowledge - The competent technology specialist understands:
6A. the importance of collaboration with teachers, administrators, pupil personnel services personnel, parents, and others in a culturally responsive program.
6B. when to refer individuals with disabilities’ needs to another professional regarding technology.

Performance - The competent technology specialist:
6C. conducts in-service training in applications of technology in special education.
6D. refers team members and families to assistive and instructional technology resources.
6E. collaborates with other team members in planning and implementing the use of assistive and adaptive devices.

STANDARD 7 - Professionalism and Ethical Practices

The competent technology specialist understands teaching as a profession, maintains standards of professional conduct, and provides leadership to improve student learning and well-being. [28.320(g)]

Knowledge - The competent technology specialist understands:
7A. equity, ethical, legal, and human issues related to technology in special education.

Performance - The competent technology specialist:
7B. maintains ongoing professional development to acquire knowledge and skills about new developments in technology.
7C. adheres to copyright laws about duplication and distribution of software and other copyrighted technology materials.
7D. advocates for assistive or instructional technology on individual and system change levels.
International Society for Technology in Education (ISTE)
Technology Facilitation (TF) -- Initial Endorsement Standards

Educational Computing and Technology Facilitation (TF) endorsement programs meeting ISTE standards will prepare candidates to serve as building/campus-level technology facilitators. Candidates completing this program will exhibit knowledge, skills, and dispositions equipping them to teach technology applications; demonstrate effective use of technology to support student learning of content; and provide professional development, mentoring, and basic technical assistance for other teachers who require support in their efforts to apply technology to support student learning.

The International Society for Technology in Education recognizes that educational computing and technology foundations are essential for all teachers. ISTE also acknowledges educational computing and technology specialty areas beyond these foundations and has established program standards for initial and advanced programs. These program standards will assist teacher education units, and professional organizations and agencies in understanding and evaluating the educational preparation needed for specialization within the field.

This document contains program standards for the Educational Computing and Technology Facilitation (TF) initial endorsement designed to prepare candidates to serve as building/campus-level technology facilitators. Institutions that offer this program should respond to the corresponding program standards. Educational technology facilitation candidates must meet prerequisite foundations for educational technology prior to full admission to the Technology Facilitation program. (http://cnets.iste.org/ncate/n_found.html)

Technology Facilitation Standard I. (TF-I) Technology Operations and Concepts
Educational technology facilitators demonstrate an in-depth understanding of technology operations and concepts.

A. Demonstrate knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Educational Technology Standards for Teachers). Candidates:
   a. Assist teachers in the ongoing development of knowledge, skills, and understanding of technology systems, resources, and services that are aligned with district and state technology plans.
   b. Provide assistance to teachers in identifying technology systems, resources, and services to meet specific learning needs.

B. Demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies. Candidates:
   a. Model appropriate strategies essential to continued growth and development of the understanding of technology operations and concepts.

Technology Facilitation Standard II. (TF-II) Planning and Designing Learning Environments and Experience
Educational technology facilitators plan, design, and model effective learning environments and multiple experiences supported by technology. Educational technology facilitators:
A. Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners. Candidates:
   a. Provide resources and feedback to teachers as they create developmentally appropriate curriculum units that use technology.
   b. Consult with teachers as they design methods and strategies for teaching computer/technology concepts and skills within the context of classroom learning.
   c. Assist teachers as they use technology resources and strategies to support the diverse needs of learners including adaptive and assistive technologies.

B. Apply current research on teaching and learning with technology when planning learning environments and experiences. Candidates:
   a. Assist teachers as they apply current research on teaching and learning with technology when planning learning environments and experiences.

C. Identify and locate technology resources and evaluate them for accuracy and suitability. Candidates:
   a. Assist teachers as they identify and locate technology resources and evaluate them for accuracy and suitability based on district and state standards.
   b. Model technology integration using resources that reflect content standards.

D. Plan for the management of technology resources within the context of learning activities. Candidates:
   a. Provide teachers with options for the management of technology resources within the context of learning activities.

E. Plan strategies to manage student learning in a technology-enhanced environment. Candidates:
   a. Provide teachers with a variety of strategies to use to manage student learning in a technology-enhanced environment and support them as they implement the strategies.

F. Identify and apply instructional design principles associated with the development of technology resources. Candidates:
   a. Assist teachers as they identify and apply instructional design principles associated with the development of technology resources.

**Technology Facilitation Standard III. (TF-III) Teaching, Learning, and the Curriculum**

Educational technology facilitators apply and implement curriculum plans that include methods and strategies for utilizing technology to maximize student learning. Educational technology facilitators:

A. Facilitate technology-enhanced experiences that address content standards and student technology standards. Candidates:
   a. Use methods and strategies for teaching concepts and skills that support integration of technology productivity tools (refer to NETS for Students).
   b. Use and apply major research findings and trends related to the use of technology in education to support integration throughout the curriculum.
   c. Use methods and strategies for teaching concepts and skills that support integration of research tools (refer to NETS for Students).
   d. Use methods and strategies for teaching concepts and skills that support integration of problem solving/decision-making tools (refer to NETS for Students).
e. Use methods and strategies for teaching concepts and skills that support use of media-based tools such as television, audio, print media, and graphics.

f. Use and describe methods and strategies for teaching concepts and skills that support use of distance learning systems appropriate in a school environment.

g. Use methods for teaching concepts and skills that support use of web-based and non web-based authoring tools in a school environment.

B. Use technology to support learner-centered strategies that address the diverse needs of students. Candidates:
   a. Use methods and strategies for integrating technology resources that support the needs of diverse learners including adaptive and assistive technology.

C. Apply technology to demonstrate students' higher order skills and creativity. Candidates:
   a. Use methods and facilitate strategies for teaching problem solving principles and skills using technology resources.

D. Manage student learning activities in a technology-enhanced environment. Candidates:
   a. Use methods and classroom management strategies for teaching technology concepts and skills in individual, small group, classroom, and/or lab settings.

E. Use current research and district/region/state/national content and technology standards to build lessons and units of instruction. Candidates:
   a. Describe and identify curricular methods and strategies that are aligned with district/region/state/national content and technology standards.
   b. Use major research findings and trends related to the use of technology in education to support integration throughout the curriculum.

Technology Facilitation Standard IV. (TF-IV) Assessment and Evaluation

Educational technology facilitators apply technology to facilitate a variety of effective assessment and evaluation strategies. Educational technology facilitators:

A. Apply technology in assessing student learning of subject matter using a variety of assessment techniques. Candidates:
   a. Model the use of technology tools to assess student learning of subject matter using a variety of assessment techniques.
   b. Assist teachers in using technology to improve learning and instruction through the evaluation and assessment of artifacts and data.

B. Use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning. Candidates:
   a. Guide teachers as they use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.

C. Apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity. Candidates:
   a. Assist teachers in using recommended evaluation strategies for improving students' use of technology resources for learning, communication, and productivity.
   b. Examine and apply the results of a research project that includes evaluating the use of a specific technology in a P-12 environment.
Technology Facilitation Standard V. (TF-V) Productivity and Professional Practice
Educational technology facilitators apply technology to enhance and improve personal productivity and professional practice. Educational technology facilitators:

A. Use technology resources to engage in ongoing professional development and lifelong learning. Candidates:
   a. Identify resources and participate in professional development activities and professional technology organizations to support ongoing professional growth related to technology.
   b. Disseminate information on district-wide policies for the professional growth opportunities for staff, faculty, and administrators.

B. Continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning. Candidates:
   a. Continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.

C. Apply technology to increase productivity. Candidates:
   a. Model advanced features of word processing, desktop publishing, graphics programs, and utilities to develop professional products.
   b. Assist others in locating, selecting, capturing, and integrating video and digital images in varying formats for use in presentations, publications and/or other products.
   c. Demonstrate the use of specific-purpose electronic devices (such as graphing calculators, languages translators, scientific probeware, or electronic thesaurus) in content areas.
   d. Use a variety of distance learning systems and use at least one to support personal/professional development.
   e. Use instructional design principles to develop hypermedia and multimedia products to support personal and professional development.
   f. Select appropriate tools for communicating concepts, conducting research, and solving problems for an intended audience and purpose.
   g. Use examples of emerging programming, authoring or problem solving environments that support personal/professional development.
   h. Set and manipulate preferences, defaults, and other selectable features of operating systems and productivity tool programs commonly found in P-12 schools.

D. Use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning. Candidates:
   a. Model the use of telecommunications tools and resources for information sharing, remote information access, and multimedia/hypermedia publishing in order to nurture student learning.
   b. Communicate with colleagues and discuss current research to support instruction, using applications including electronic mail, online conferencing, and web browsers.
   c. Participate in online collaborative curricular projects and team activities to build bodies of knowledge around specific topics.
   d. Design, develop, and maintain Web pages and sites that support communication between the school and community.

Technology Facilitation Standard VI. (TF-VI): Social, Ethical, Legal, and Human Issues
Educational technology facilitators understand the social, ethical, legal, and human issues surrounding the use of technology in P-12 schools and assist teachers in applying that understanding in their practice. Educational technology facilitators:

A. Model and teach legal and ethical practice related to technology use. Candidates:
   a. Develop strategies and provide professional development at the school/classroom level for teaching social, ethical, and legal issues and responsible use of technology.
   b. Assist others in summarizing copyright laws related to use of images, music, video, and other digital resources in varying formats.

B. Apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities. Candidates:
   a. Assist teachers in selecting and applying appropriate technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
   b. Identify, classify, and recommend adaptive /assistive hardware and software for students and teachers with special needs and assist in procurement and implementation.

C. Identify and use technology resources that affirm diversity. Candidates:
   a. Assist teachers in selecting and applying appropriate technology resources to affirm diversity and address cultural and language differences.

D. Promote safe and healthy use of technology resources. Candidates:
   a. Assist teachers in selecting and applying appropriate technology resources to promote safe and healthy use of technology.

E. Facilitate equitable access to technology resources for all students. Candidates:
   a. Recommend policies and implement school/classroom strategies for achieving equitable access to technology resources for all students and teachers.

Technology Facilitation Standard VII. (TF-VII): Procedures, Policies, Planning, and Budgeting for Technology Environments

Educational technology facilitators promote the development and implementation of technology infrastructure, procedures, policies, plans, and budgets for P-12 schools. Educational technology facilitators:

A. Use the school technology facilities and resources to implement classroom instruction. Candidates:
   a. Use plans to configure software/computer/technology systems and related peripherals in laboratory, classroom cluster, and other appropriate instructional arrangements.
   b. Use local mass storage devices and media to store and retrieve information and resources.
   c. Discuss issues related to selecting, installing, and maintaining wide area networks (WAN) for school districts.
   d. Model integration of software used in classroom and administrative settings including productivity tools, information access/ telecommunication tools, multimedia/hypermedia tools, school management tools, evaluation/portfolio tools, and computer-based instruction.
   e. Utilize methods of installation, maintenance, inventory, and management of software libraries.
   f. Use and apply strategies for troubleshooting and maintaining various hardware/software configurations found in school settings.
g. Use network software packages used to operate a computer network system.
h. Work with technology support personnel to maximize the use of technology resources by administrators, teachers, and students to improve student learning.

B. Follow procedures and guidelines used in planning and purchasing technology resources. Candidates:
   a. Identify instructional software to support and enhance the school curriculum and develop recommendations for purchase.
   b. Discuss and apply guidelines for budget planning and management procedures related to educational computing and technology facilities and resources.
   c. Discuss and apply procedures related to troubleshooting and preventive maintenance on technology infrastructure.
   d. Apply current information involving facilities planning issues and computer related technologies.
   e. Suggest policies and procedures concerning staging, scheduling, and security for managing computers/technology in a variety of school/laboratory/classroom settings.
   f. Use distance and online learning facilities.
   g. Describe and identify recommended specifications for purchasing technology systems in school settings.

C. Participate in professional development opportunities related to management of school facilities, technology resources, and purchases. Candidates:
   a. Support technology professional development at the building/school level utilizing adult learning theory.

Technology Facilitation Standard VIII. (TF-VIII) Leadership and Vision
Educational technology facilitators will contribute to the shared vision for campus integration of technology and foster an environment and culture conducive to the realization of the vision. Educational technology facilitators:

A. Use the school technology facilities and resources to implement classroom instruction. Candidates:
   a. Discuss and evaluate current research in educational technology.

B. Apply strategies for and knowledge of issues related to managing the change process in schools. Candidates:
   a. Discuss the history of technology use in schools.

C. Apply effective group process skills. Candidates:
   a. Discuss the rationale for forming school partnerships to support technology integration and examine an existing partnership within a school setting.

D. Lead in the development and evaluation of district technology planning and implementation. Candidates:
   a. Participate in cooperative group processes and identify the processes that were effective.
   b. Conduct an evaluation of a school technology environment.
   c. Identify and discuss national, state, and local standards for integrating technology in the school environment.
   d. Describe curriculum activities or performances that meet national, state, and local technology standards.
e. Discuss issues related to developing a school technology plan.

f. Discuss the elements of and strategies for developing a technology strategic plan.

g. Examine issues related to hardware and software acquisition and management.

E. Engage in supervised field-based experiences with accomplished technology facilitators and/or directors. Candidates:

a. Examine components needed for effective field-based experiences in instructional program development, professional development, facility and resource management, WAN/LAN/wireless systems, or managing change related to technology use in school-based settings.

Supporting Explanation

• Standards for the Technology Facilitation Program are designed to communicate expectations for the performance of candidates who will serve as building/campus-level Technology Facilitators whose major responsibility will be to help classroom teachers apply technology to support student learning. This responsibility takes many forms within the varying environments across educational systems.

• The TF program standards are aligned with the six National Educational Technology Standards for Teachers, but extend the performance expectations of each candidate to reflect preparation for serving as mentor, coordinator, or technology integration specialist, assisting the teachers in their efforts to support student learning and professional growth with technology.