UNIVERSITY OF MARYLAND

EDUC 477
Assistive Technology for the Classroom Setting

SYLLABUS

Instructor:	Davina Pruitt-Mentle
Office:	Rms., 2127 Tawes
Phone:	301-405-8202
Email:	dp151@umail.umd.edu
Website:	www.edtechoutreach.umd.edu
Office Hours:	By appointment
Credits:	3 credit

Catalogue Description:
This course is designed to be an introductory survey course for educators in the application of assistive technology in the general classroom setting. Students will be introduced to various assistive technologies and strategies.

Course Description:
COMAR regulations have changed to ensure that all students have equivalent access to computer-based instructional technology. Revisions align with Section 508 of the Federal Rehabilitation Act, "Electronic and Information Technology Accessibility Standards", and impact educators at all levels. The new Maryland teacher and administrator technology standards require ALL educators to have a more fluent understanding of assistive technology (AT) options and possibilities. This course is designed to be an introductory survey course for educators in the application of assistive technology in the general classroom setting to help schools comply with the new requirements. Students will learn about the continuum of AT devices, universal design for learning, curriculum adaptation and integration strategies, and assessment and evaluation protocols. Additional discussions will include action plan development related to systemic implementation strategies for supporting the use and integration of assistive technologies in the school setting.

Course Rationale:
The Individuals with Disabilities Education Act (IDEA), as reauthorized, promotes and serves to insure that all students with disabilities will be provided access to an appropriate curriculum in the least restrictive environment (LRE). This mandate necessitates that **regular and special educators** become familiar with multiple solutions necessary for educating students regardless of disability. The state of technology as we enter the new millennium allows for "easy access" in a "user-friendly" environment. This course is specifically designed to support the goal of preparing thoughtful and responsive educators who can take on the unique challenges inherent in the diversity of today's classrooms. To ensure a free and appropriate education for all students, teachers must enter the classroom equipped with the content

knowledge, diverse instructional strategies, technology integration skills, and knowledge of assessment and evaluation protocols. This course will help amplify a teacher's skills in these areas by adding the additional knowledge of AT devices, curriculum adaptation and integration strategies, and assessment and evaluation protocols.

Objectives:
At the completion of this module, students will:

1. review research on effective assistive technology-enhanced instruction in the classroom.
2. identify the legislative policies connected with assistive technology
3. review assistive technology options and adaptive assistive devices for students with special needs and become familiar with technologies available to meet the mandates designed by IDEA (The Individuals with Disabilities Education Act-IDEA '97, Section 504 of the Rehabilitation Act of 1973, Americans with Disabilities Act (ADA) and Maryland COMAR regulations that support student access to and progress in the general curriculum. To include:
    o discuss the use of "no tech" and "low tech" accommodations to address the needs of students with disabilities.
    o demonstrate how a computerized graphic organizer can assist students with learning disabilities.
    o use software to develop an IEP (Individualized Education Plan) and exchange information with another professional so that appropriate assistive technology is identified.
    o use a modified keyboard.
    o explore the use of portable keyboards and word processors as assistive technology devices.
    o demonstrate the use of Personal Communication Symbols (PCS) in a variety of instructional situations
    o explore the use of various software to develop an IEP (Individualized Education Plan) that includes modifications which are based on the student's strength's and needs
    o explore the use of adaptive keyboards to interact with instructionally appropriate multimedia software
    o review augmentative and alternative communication (AAC) through the development of multi-level environments
    o utilize auditory and visual scanning in choice making with the use of (an) adaptive switch(s)

4. identify national and local organizations and services associated with assistive technology.
5. utilize state and national content and technology standards in designing technology -enhanced instruction and school technology plans.
6. evaluate AT software applications for enhancing instruction and school administration.
7. discuss Universal design principles in the context of general education environments and curriculum materials.
8. explore the process for finding the right technology and the right applications, and determine how to pay for it.
9. explore and discuss how to establish a technology team with an assistive technology representative, perform a school wide assessment of *all* student needs and develop a school and/or classroom tech plan.
10. review and discuss assistive technology-enhanced options and materials for culturally diverse populations.
11. review and discuss equity, ethical and legal issues in using technology in schools.
12. share knowledge of important issues and trends related to assistive technology-enhanced content through online collaborative group discussions and reflect upon student experiences in a Web enhanced/Web-based course.

Readings:

Texts: King, Thomas W. (1999). *Assistive Technology: Essential Human Factors.*
                                       Needham Heights, MA: Allyn & Bacon.
                                       ISBN 0205273262

                                       Computer and Web Resources for People with Disabilities: A Guide to
                                       Exploring Today's Assistive Technology-3rd ed. Alliance for Technology
                                       Access, Foreword by Stephen Hawking / Paperback / Hunter House Inc.
                                       ISBN 0897933001

Additional recommended readings are included in this syllabus. Others can be found at:
www.edtechoutreach.umd.edu

Methodology: This course will utilize a combination of face to face and on-line lecture and reading materials, hands-on experiences, discussions, guest speakers, group work and projects to help participants understand effective strategies for integrating assistive technology into their classroom (when and where appropriate) .

Course Expectations and Procedures:

1. Students are expected to obtain and actively use a computer account with access to the Internet and WebCT discussion site (the University provides such accounts free to enrolled students.) Students are expected to use anti-virus software and backup all work.

2. Completion of assigned tasks and readings prior to each class is required in order to facilitate student learning.

3. It is expected that students will initiate, participate in and facilitate on-line discussions on course topics, issues and readings.

4. If you have a documented disability and wish to discuss academic accommodations please contact me as soon as possible.

5. Students missing the deadline for an assignment must make immediate arrangements with the instructor to fulfill that requirement before the next class session.

6. Please carefully edit all written assignments. A lack of care in proofreading or composition can negatively effect your final grade. For more information, see Writing and Editing Hints (http://curry.edschool.virginia.edu/curry/class/edis/771ce/lynch003/edit.html).

7. The citation style employed should be accurate, acceptable, and recognizable (MLA, Chicago or APA) practice. The American Psychological Association (APA: http://www.apa.org) style of citation is preferred.

8. The University of Maryland has developed a policy describing appropriate academic conduct. Turning in assignments that use substantial portions of the work of others without attribution is considered plagiarizing and is specifically prohibited. Please review information regarding the Honor Code and other academic integrity policies at: http://www.inform.umd.edu/CampusInfo/Departments/JPO/code_acinteg.html .

Grading Policy:

Grades will be based on the content, clarity of writing and creativity of work in assignments completed for this course. The extent and quality of participation in course discussions (face to face and virtual) will also be evaluated in determining the final grade. The relative portion of the grade assigned to each course component will include:

25%   In-class and online discussions and activities from course materials.
20%   Paper/Project 1
20%   Paper/Project 2
20%   Paper/Project 3
15%   A reflection paper or electronic portfolio that capstones course activities

The evaluation criteria for this course are described in more detail in the grading rubric.

The grading rubric below describes participant performance expectations and efforts most valued. Professionalism, completeness, timeliness and quality are all considered in the evaluation process.

Educational Technology Outreach Grading Rubric

Letter Grade	Extent, Quality and Creativity of Work	Completeness of Work	Timelessness of work	Participation in discussions
A+	Exceptional Quality and insight; honors spirit of task; a rare and valuable contribution to understanding	100% complete (or beyond); a model for others to follow; honors spirit of task	100% on time	insightful, thoughtful and stimulating contributions to discussions; beyond what is normally expected; 100%
A	Convincingly on target with the purpose of the assignment; evidence of growth; learning difficult to refute; worthy contribution to our understanding; reader not distracted by errors in grammar, writing flow, spelling or punctuation	What is missing may not be missed; accurate; a whole product	Almost always on time; rare but forgivable tardiness	Thought provoking discussions; 100% contribution
A-	Fulfills all primary requirements of the assignment; some evidence of growth; learning difficult to refute; contribution to our understanding; reader not distracted by errors in grammar, writing flow, spelling or punctuation	A whole product but lacks "the extras"; accurate; on target with regard to task	Almost always on time; rare but forgivable tardiness	At least 95% contribution to discussions; dialogue thoughtful and insightful but lacks vigor or conviction
B+/B	Competent and worthy; provides credible evidence of learning and growth; may not completely honor spirit of task; perhaps an "off-day"; errors of grammar, spelling, punctuation distract the reader	Moderate shortcomings; minor elements missing; affects instructor's ability to see the product as a whole	Late and/or often enough to alarm instructor; not necessarily chronic	Moderate participation with some insightful comments
B-	Passable; only enough to get by; needs more proofreading or writing skills	Sufficient; least you could do and justify	Some tasks could be late	Barely participates in discussion; class contributions

				add little insightfulness and do not provoke further discussion
C	Undergraduate level/quality; unsophisticated; exhibits little course concept or concepts	Evidence of learning or growth insufficient	Excessively or repeatedly late	Limited participation in discussion; Little if any preparation or thought in dialogue
F	Unacceptable	Difficult to recognize as the assigned task or not turned in at all	Missing/not submitted	Little if any participation in discussions

The University of Maryland, College Park
College of Education
Outreach Programs

Educational Technology Outreach

How this course meets the ISTE/NETS*T Foundations for All Teachers and MSDE Teacher Technology Standards

Course Title: Assisitve Technology for the Classroom Setting

Completion of any course does not certify competency in the identified area: however, it will contribute to development of the competency

I. Technology Operations and Concepts
Teachers demonstrate a sound understanding of technology operations and concepts.

VII. Professional Growth

Develop professional practices that support continual learning and professional growth in technology.

Teachers:

A. demonstrate introductorily knowledge, skills, and understandings of concepts related to technology	Yes
B. demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies	Yes
1. Create a professional development plan that includes resources to support the use of technology in life long learning.	Yes
1. Use resources of professional organizations and groups that support the integration of technology into instruction.	Yes
2. Continually evaluate and reflect on professional practices and emerging technologies to support student learning.	Yes
3. Identify local, state and national standards and use them to improve teaching and learning.	Yes

II. Planning and designing learning environments and experiences
Teachers plan and design effective learning environments and experiences supported by technology.

I. Information Access, Evaluation, processing and Application

Access, evaluate, process and apply information efficiently and effectively.

Teachers:

A. design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.	Yes
B. apply current research on teaching and learning with technology when planning learning environments and experiences.	Yes

C. identify and locate technology resources and evaluate them with accuracy and suitability	Yes
D. plan for the management of technology resources within the context of learning activities	Yes
E. plan strategies to manage learning in a technology-enhanced environment.	Yes
1. Identify, locate, retrieve and differentiate among a variety of electronic sources of information using technology.	Yes
2. Evaluate information critically and completely for a specific purpose.	Yes
3. Organize, categorize and store information for efficient retrieval.	
4. Apply information accurately in order to solve a problem or answer a question.	

III. Teaching, learning, and the curriculum
Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning.

V. Integrating Technology into the Curriculum and Instruction

Design, implement and assess learning experiences that incorporate use of technology in a curriculum-related instructional activity to support understanding, inquiry, problem solving, communication and/or collaboration.

Teachers:

A. facilitate technology-enhanced experiences that address content standards and student technology standards.	Yes
B. use technology to support learner-centered strategies that address the diverse needs of students.	Yes
C. apply technology to develop students' higher order skills and creativity.	
D. manage student learning activities in a technology-enhanced environment.	Yes
1. assess students' learning/instructional needs to identify the appropriate technology for instruction.	Yes
2. Evaluate technology materials and media to determine their most appropriate instructional use.	Yes
3. Select and apply research-based practices for integrating technology into instruction.	Yes
4. Use appropriate instructional strategies for integrating technology into instruction.	Yes
4. Select and use appropriate technology to support content-specific student learning outcomes.	Yes
5. Develop an appropriate assessment for measuring student outcomes through the use of technology.	Yes
6. Manage a technology-enhanced environment to maximize student learning.	Yes

IV. Assessment and evaluation
Teachers apply technology to facilitate a variety of effective assessment techniques and evaluation strategies.

IV. Assessment for Administration and Instruction

Use technology to analyze problems and develop data-driven solutions for instructional and school improvement.

Teacher:

A. apply technology in assessing student learning of subject matter using a variety of assessment techniques.	Yes
B. use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.	Yes
C. apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity	Yes
1. Research and analyze data related to student and school performance.	Yes
2. Apply findings and solutions to establish instructional and school improvement goals.	Yes
3. Use appropriate technology to share results and solutions with others, such as parents and the larger community.	Yes

V. Productivity and professional practice
Teachers use technology to enhance their productivity and professional practice.

VII. Professional Growth
Develop professional practices that support continual learning and professional growth in technology.

I. Information Access, Evaluation, Processing and Application
Access, evaluate, process and apply information efficiently and effectively.
II. Communication
  A. Use technology effectively and appropriately to interact electronically.
  B. Use technology to communicate information in a variety of formats.

Teachers:

A. use technology resources to engage in ongoing professional development and lifelong learning	Yes
B. continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning	Yes
C. apply technology to increase productivity	Yes
D. use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning	Yes
VII-1. Create a professional development plan that includes resources to support the use of technology in life long learning.	Yes
VII-2. Use resources of professional organizations and groups that support the integration of technology into instruction.	Yes
VII-3. Continually evaluate and reflect on professional practices and emerging technologies to support student learning.	Yes
VII-4. Identify local, state and national standards and use them to improve teaching and learning.	Yes
I-1. Identify, locate, retrieve and differentiate among a variety of electronic sources of information using technology.	Yes
I-2. Evaluate information critically and completely for a specific purpose.	Yes
I-3. Organize, categorize and store information for efficient retrieval.	Yes
I.-4. Apply information accurately in order to solve a problem or answer a question.	Yes
II-A.1 Use telecommunications to collaborate with peers, parents, colleagues, administrators and/or experts in the field.	Yes

II-B.1. Select appropriate technologies for a particular communication goal.	Yes
II-B.2. Use productively tools to publish information.	Yes
II-B.3. Use multiple digital sources to communicate information online.	Yes

VI Social, Ethical, Legal, and Human Issues
Teachers understand the social, ethical, legal, and human issues surrounding the use of technology in PK-12 schools and apply that understanding in practice.

III. Legal, Social, and Ethical issues
Demonstrate an understanding of the legal, social, and ethical issues related to technology use.

VI. Assistive Technology
Understand human, equity and developmental issues surrounding the use of assistive technology to enhance student learning performance and apply that understanding to practice.

Teachers :

A. model and teach legal and ethical practice related to technology use.	Yes
B. apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.	Yes
C. identify and use technology resources that affirm diversity.	Yes
D. promote safe and healthy use of technology resources.	Yes
E. facilitate equitable access to technology resources for all students.	Yes
III-1. Identify ethical and legal issues using technology	Yes
III-2. Analyze issues related to the uses of technology in educational settings.	Yes
III-3. Establish classroom policies and procedures that ensure compliance with copyright law, fair Use guidelines, security, privacy and student online protection.	Yes
III-4. Use classroom procedures to manage an equitable, safe and healthy environment for students.	Yes
VI-1. Identify and analyze assistive technology resources that accommodate individual student learning needs.	Yes
VI-2. Apply assistive technology to the instructional process and evaluate its impact on learners with diverse backgrounds, characteristics and abilities.	Yes

Course Outline:

Class Session	Topic	Class Activities	Assignments

#1	<u>Introduction to Assistive Technology, Student Assessment Strategies, and the Law</u>
	Overview of trends and issues in AT, including discussion on the laws (IDEA, ADA, Tech Act), the IEP and accessing the curriculum frameworks in general education settings, and the low tech continuum of AT tools.
	• Welcome and review of course/module(s) components
	• Discuss acronyms and vocabulary
	• Discuss the impact of Federal Legislation
	• Discuss definition(s) of Assistive Technology
	• Discuss the controversies related to mainstreaming and Inclusion
	• Discuss the meaning of "High, Low and No" Tech assistive technology
		• Review the course syllabus
		• Introduction to the online course components
		• Exploring the online course features
		
		• *Pre-course Survey/Assessment* (Online in WebCT)
		
		• Overview of the tools, software, and hardware to be used during this module
		• Explore AT, student assessment strategies , and the Law- *Advanced Search Exercise-Scavenger Hunt (mock school)*
		• Impact of Federal Legislation-overview
		  • Public Law 94-142
		  • Public Law 100-407
		  • IDEA '90-99-457
		  • ADA 101-336
		  • IDEA '97 105-17
		  • Tech Act
		• State **COMAR** 13A.05.02.13H
		
		• Definition of "Assistive Technology"
		  • *List examples of AT*
		  • *Use the Internet* to define/describe AT and the various disabilities as described in federal law: IDEA '97 (*www.ideapractices.org*).
		  • Differentiate between AT as an accommodation and AT as a modification
		  • Brainstorm accommodations used in everyday life to provide accessibility
		
		• Controversies Related to Mainstreaming and Inclusion
		  • Mainstreaming
		  • Inclusion
		  • Collaboration
		  • Transition Needs
		  • Access Issues Based on ADA
		  • Cost verses Potential Benefits
		• How does this impact me?
		  • *Share and discuss Scavenger Hunt exercise*
		  • *Group activity-Share and discuss case study scenarios*
			• Continue exploration of historical, legal and political influences with AT; research on assistive technology in the classroom (see on-line reading selection) and Maryland School data
			
			• Asynchronous Postings:
			  - 1.1: Introduction
			  - 1.2: Impact on me
			  - 1.3: School data
			  - 1.4: Reading Reflection
			• Reflective Action Plan Journal Entry
			
			Reading

#2	<u>Access to Print</u> Strategies for accessing print materials including scanning,	• Analyze engagement of learners in your own classroom and utilization of technology in teaching using the *NCRTEC Teaching Profile instrument* (online-see readings)	• Continue exploration of research on assistive technology in the

	use of text to speech tools, internet based resources (etext), low tech to high tech adaptations of books • Explore visual learning to organize information • Explore picture communication symbols • Explore text to voice software	• Share results of own school profile - exploring data: ▪ state standards, goals and outcomes ▪ individual school's performance using the mdk-12 site (MSPAP,CBR) ▪ individual school demographics (socio-economic/ethnic/gender/FARMS) ▪ student receiving special services ▪ individual technology inventory • High, Low & No tech discussion • *PowerPoint* • *Interactive Quiz-WebCT* • Using Visual Learning to Organize Information • Describe barriers encountered in the classroom while attempting to meet the needs of students with disabilities • List possible solutions to the described barriers • *Inspiration/Kispiration exercise to list and organize information for the class* • Discussion of practical applications of Inspiration/Kidspiration for learning disabled students	classroom. Readings: (see on-line reading selections) • Asynchronous Postings: - 2.1+: school summary continued & review and critical critique of other class members data analysis of their school - 2.2:case study scenarios-Barriers - 2.3: Reading Reflection • IEP exercise of a "mock"student - Record student's current strengths and needs • Create an autobiographical web • Post ideas regarding module project to instructor • Reflective Action Plan Journal Entry Reading
#3	<u>Access to Print cont.</u> Strategies for accessing print materials including scanning, use of text to speech tools internet based resources (etext), low tech to high tech adaptations of books • Explore visual learning to organize information • Explore picture communication symbols • Explore text to voice software	• Picture Communication Symbols • *Writing With Symbols 2000* text-to-picture-to-voice • Use to accommodate reading comprehension • Use to accommodate word recognition • Text to Voice software • Copy and paste feature of *Write:OutLoud* to answer questions in complete sentences • Insert a picture, use spell check and the dictionary function • Synchronous chat: online forum with guest speaker to identify and discuss appropriate print material and strategies for converting print into a more accessible environment	• Continue exploration of research on assistive technology in the classroom. Readings: (see on-line reading selections) • Scavenger Hunt Activity • Treasure Hunt Activity • Send via email ideas for paper/project #1 • Asynchronous Postings: - 3.1: discussion of Scavenger Hunt - 3.2: discussion of Treasure Hunt activity - 3.3:Reading Reflection • Reflective Action Plan Journal Entry Reading
#4	<u>Available Devices and Services</u> • More Legal requirements • IEP exercise (Individual Educational Program) • Discuss and demonstrate	• More Legal requirements • Copyright • Types of available devices found at www.ablenet.com • Types of services found at www.gait.org • IEP exercise Individual Educational Program)	• Use search engines and online course links to explore research on developing technology-enhanced instruction for special needs students • Possible Guest speaker-on-line chat room

	"low tech" assistive technology solutions	• Use a case management software application available at your school (or download demos from a variety of sources: see http://dmoz.org/Computers/Software/Educational/Special_Education/) to review the parts of an IEP
		• List strengths and needs of a mock student/student
		• Develop goals and objectives to address the needs
		• Discuss and demonstrate "low tech" assistive technology solutions
		  • Pencil grip
		  • Highlighter/highlighter tape
		  • Different types of calculators (large screen, talking, backspace, large keys, money)
		  • Manipulatives to determine if a mathematical answer is logical
		  • Graph paper to organize math problems
		  • Raised line paper to assist handwriting
		  • Spelling dictionaries (printed personal spelling dictionary-word processor alphabetizes words, Franklin Speller)
		  • Dictionary pen
		    • Create an individual dictionary to be used with word prediction software
		    • Use Microsoft windows accessibility features to assist students with disabilities effected by visual or modality issues
		    • Use Microsoft Office to create customized lines
			(MSDE-AT)
			• Continue the discussion/ dialogue on technology-enriched instructional units based on research on using technology with a special needs student (module project)
			• Update/continue with IEP exercise with a student currently in your class (or has been in the past)
			• Asynchronous postings:
			  - 4.1+: Post IEP exercise of mock student and develop an instructional lesson plan meeting their needs, integrating some of the "low" tech devices discussed in class and review/critique classmates posting
			  - 4.2: Reading Reflection
			• Reflective Action Plan Journal Entry
			
			Reading

#5	<u>Supporting Students in Learning Complex Material</u>
	
	• Identification of Appropriate AT
	• Using Microsoft Office in Inclusion
	• Portable keyboards
	• Word Prediction software
		• Identification
		  • With partner share IEP's developed with your student
		  • Compare recommendations
		• Using Microsoft Office in Inclusion
		  • Discuss
		  • Practice
		• Portable keyboards
		  • Highlight and copy and paste text in a word processor/portable keyboard (Dreamwriter/AlphaSmart)
		  • Print
		• Word Prediction software
		  • Participants will create individual dictionary
		  • Participants will discuss pros and cons of word prediction software
			• Post the final draft of your module project AND your reflection paper in the appropriate on-line assignment folders
			• Possible Synchronous Guest Speaker: Reflective Teaching
			• Asynchronous postings:
			  - 5.1: Group consensus and debriefing
			• Dialogue and reflection upon the on-line learning experience
			• Personal assessment of assistive technology enhanced activity
			
			Reading

#6	<u>Supporting Teachers and Learning with Technology</u>	• Brief review of definitions of AT, AT services, and the various disabilities, as described in federal	• Continue exploration of research on assistive technology in the

#	Topic	Content / Activities	Assignments / Postings

		law: IDEA '97.
		
		• Review the use of AT as an accommodation.
		
		• Given the following devices are normally used as an accommodation, brainstorm with a partner how these same devices might be used as an appropriate modification.
		  • Reading Pen
		  • Spelling dictionary
		  • Text-to-voice software
		  • Calculator
			classroom (see on-line reading selection)
			• Asynchronous Postings:
			  - 6.1: introduction (if needed)
			  - 6.2: Reading Reflection
			  - 6.3: Reading Reflection
			• Reflective Action Plan Journal Entry
			PAPER/PROJECT #1 Due
			
			Reading

#7	<u>Access to the General Curriculum and Connection with State Standards</u>
	
	• Designing technology-enhanced instruction using local/state/national content and technology standards
		• On-line guest speaker from Adaptive Environments (www.adaptenv.org) –chat room
		• Curriculum Standards
		  - state standards, goals and outcomes
		  - benchmarks, indicators and performance objectives
		• MSDE and mdk12 resources related to assistive technology
		• ISTE/NETS/NCATE resources related to assistive technology
		
		Streamlining Curriculum-Based Assessment
		• Standards-based activities
		  - Standards-based evaluation activity
		  - vignettes
		
		• Introduction to a standards-based activity/lesson template (5 E's) for integrating assistive technology in teaching
			• Continue exploration of research on assistive technology in the classroom (see on-line reading selection)
			
			• Based on "best practices research" findings- in using assistive technology in teaching, use the template provided to create a first-draft of a 5-E's lesson where modifications to state Benchmark/Indicators and performance objectives are addressed
			• Asynchronous Postings:
			  - 7.1: standards summary
			  - 7.2: Review and critical critique of other class members lesson plans/activities
			  - 7.3: Reading Reflection
			  - 7.4: Reading Reflection/vignette
			• Reflective Action Plan/Journal Entry
			
			Reading

#8	<u>Software and web-Based Applications</u>
	
	Overview and evaluation of software and web-based applications for building inclusive standards-based activities for students of varying abilities
		• Standards based activities for students of varying ability (Possible guest speaker (chat room) from Easter Seals (www.eastersealsma.org)
		
		• Small group discussion and debriefing of posted first drafts of AT enriched-standards-based lesson plan/activity
		
		  • Explore software useful in the technology-enhanced lesson being developed, including specific tools in:
		  • Microsoft Word (creating a document, adding graphics, readability tool)
		  • PowerPoint (creating a slide; adding text,
			• Continue exploration of research on assistive technology in the classroom (see on-line reading selection)
			• Send via email ideas for Paper/Project #2
			• Asynchronous Postings:
			  - 8.1: Identify specific software (from class

		coloring a slide, running a slide show) • TeacherWeb/WebCT/Blackboard and other web sources for creating class Web sites • Inspiration for graphic organizers • Other school district software (KidPixs /Story Weaver/Math Works/ Chemistry Teacher Tool etc...)	discussion and reading) and discuss how this will enhance your lesson plan - 8.2: Post the revised lesson plan/activity that has integrated software - 8.3: Review/critique classmates revised lesson plans with suggested enhancements - 8.4: Reading Reflection - 8.5: Reading Reflection • Reflective Action Plan/ Journal Entry Reading

#9	<u>Software and web-Based Applications continued</u>	• Picture Communication Symbols (PCS) developed with Boardmaker and Writing with Symbols 2000
		  • Class schedule with PCS symbols
		• Uses of PowerPoint/Hyperstudio, Kid Pix, and IntelliPics Studio
		  • Autobiographical "student portfolio"
		• Cause-and effect slide show with Internet pictures and sounds
			• Continue exploration of research on assistive technology in the classroom (see on-line reading selection)
			• Asynchronous Postings:
			- 9.1: Identify and discuss how software (from class exercises) could enhance an existing lesson plan , activity or your own personal use
			- 9.2: Post a revised lesson plan/activity that has integrated software
			- 9.3: Review/critique classmates revised lesson plans with suggested enhancements
			- 9.4: Reading Reflection
			- 9.5: Reading Reflection
			• Reflective Action Plan/ Journal Entry
			
			Reading

#10	<u>Alternative and Augmentative Communication (AAC) & Adaptive Devices, Seating and</u>	• IntelliKeys with IntelliPics and teacher-designed	• Continue exploration of research on assistive technology in the

		overlays	classroom (see on-line reading selection)
	Positioning

A variety of communication technologies and assessment strategies will be explored. Participants will learn different communication strategies and the low and high technology tools that facilitate communication for individuals with language impairments.

Participants will explore an array of adaptive technologies and the seating and positioning criteria that support access to independent activities as well as the general curriculum | • Use of auditory and visual scanning with a switch to make choices
• Writing with Symbols 2000 or Broadmaker with Speaking Dynamically Pro to develop an AAAC device | • Asynchronous postings:
  - 10.1: Post the revised lesson
  - 10.2: Review of classmates revised lesson plans with suggested enhancements
  - 10.3: Reading Reflection
• Reflective Action Plan/ Journal Entry
• Post projects/paper in the appropriate on-line assignments folders

Paper/Project #2 Due

Reading |

Class Session	Topic	Class Activities	Assignments
#11	Universal Design and Technology Integration

• Universal design principles will be explored in the context of general education environments and curriculum materials.
• Effective models of teaching using technology will be reviewed in the context of a universally designed setting | • The history of Universal Design
• Explore general Universal design principles and how they connect with "technology" universal design
• Turning the challenges posed by high standards and increasing learner diversity into opportunities to maximize learning for every student.
• Classroom Learner profile | • Continue exploration of research on assistive technology in the classroom (see on-line reading selection) and Universal design
• Asynchronous Postings:
  - 11.1: research on universal design
  - 11.2: Reading Reflection
  - 11.3: Reading Reflection
• Reflective Action Plan Journal Entry

Reading |
| #12 | Universal Design and Technology Integration continued | • The principles of Universal design and applications to technology
  - Equitable Use
  - Flexibility in Use
  - Simple and Intuitive Use
  - Perceptible Information
  - Tolerance for Error
  - Low Physical Effort
  - Size and Space for Approach and Use
• Exercises critiquing multimedia and hypermedia through the 7 lenses | • Continue exploration of research on assistive technology in the classroom (see on-line reading selection)
• Send via mail ideas for Paper/Project #3
• Asynchronous Postings:
  - 12.1:Universal design summary
  - 12.2: Reading Reflection
  - 12.3 Reading |

			Reflection • Reflective Action Plan/Journal Entry Reading
#13	<u>Diverse students; Equity, Gender Issues</u>	• UD features in existing software for diverse groups • Using UD to facilitate individualization of learning • explore examples of UD features in existing software, with tips for how to use these features to customize instruction for students with varied learning needs. • [multiple representations of information](#) • [multiple options for expression and control](#) • [multiple options for engagement](#)	• Explore online sources for addressing the needs of male/female students and culturally diverse students • Revise the technology-enriched lesson based on research on using technology with special needs students and culturally-diverse students and males-females • Asynchronous Postings: - 13.1: Identify specific software and discuss how this will enhance your content/curriculum for diverse learners - 13.2: Reading Reflection - 13.3: Reading Reflection • Reflective Action Plan/ Journal Entry Reading

#14	<u>Funding</u>	Ensuring Due Process
		• Creating a Planning Committee for Technology
		  • Establishing a Tech Team with AT
		  • Performing a School wide Assessment of Student Needs and Capabilities
		  • Devising a Long-Range Technology Plan w/ AT
		• Supporting Technology Plans
			• Continue exploration of research on assistive technology in the classroom (see on-line reading selection)
			• Asynchronous Postings:
			- 14.1: Reading Reflection
			- 14.2: Reading Reflection
			- 14.3: Reading Reflection
			- 14.4: Reading Reflection
			• Reflective Action Plan/ Journal Entry
			
			Reading

#15	<u>Resources for Information and Services</u>	• Developing Information Resources • National & State Organizations	• Use search engines and online course links to

| | | Technical Assistance Projects (TAPs)
• Alliance for Technology Access
• Disability Organizations
• State Education Agencies
• Information Centers and Clearinghouses
    • Regional Resources
    • Federal Centers for Special Education
• Vendors
• Local Information Resources
    • Libraries
    • Internet
    • Local Universities
• Researchers as Resources
• Conferences | explore research on developing technology-enhanced instruction for the diverse student population
• Asynchronous postings:
  - 15.1: Post the revised lesson
  - 15.2: Review of revised lesson plans with suggested enhancements
  - 15.3: Reading Reflection
• Post the final paper AND your reflection paper in the appropriate on-line assignments folders
• Post Test

Reading |

Session Topics and Tentative Reading Assignments. This will periodically be updated so continue to check back often.

Example of readings- first 5 sessions

Session	Topic	Readings
1	<u>Introduction to Assistive Technology, Student Assessment Strategies, and the Law</u> Overview of trends and issues in AT, including discussion on the laws (IDEA, ADA, Tech Act, COMAR), the IEP and accessing the curriculum frameworks in general education settings, and the low tech continuum of AT tools. • Welcome and review of course/module(s) components • Discuss definition(s) of Assistive Technology • Discuss the meaning of "High, Low and No" Tech assistive technology	**Required:** • Reed, P. (March, 2001) *Resource guide for teachers and administrators about assistive technology.* **www.wati.org/resourceguide.htm** • Zabala, J. (1995). *The SETT Framework: Critical areas to consider when making informed assistive technology decisions.* Houston, TX. Region IV Education Service Center. http://jset.unlv.edu/15.4/Zabala/refs.html • Cusack, S. (2001). *Simple Solutions for Complex Learning Needs.* Boston, MA. Institute for Community Inclusion, 2001. http://www.communityinclusion.org/tech/meet/strategies.htm • COMAR overview http://www.pgcps.pg.k12.md.us/~tifa/training.html • Alliance for Access Technology (ATA). (1997). *Computer and web resources for people with disabilities.* (chapter 5). Scan the following: • Definition/description of disabilities as described in federal law IDEA 97 www.ed.gov/offices/OSERS/IDEA • Teach Act overview http://www.ataporg.org/ • ADA laws and policy briefings

http://www.usdoj.gov/crt/ada/adahom1.htm

Recommended: Great Resources

About WebCT
- http://www.courses.umd.edu/studentmanual/
- http://www.webct.com/quickstart

AT Related
- LDRC Learning Disabilities Resource Community
  http://www.ldrc.ca/

- Zabala, J. et al (2000) *Quality indicators for assistive technology services in school settings*
  http://jset.unlv.edu/15.4/Zabala/zabala.pdf
- National Center to Improve Practice (NCIP)
  www.edc.org/FSC/NCIP
- Unified Web Site Accessibility Guidelines
  http://www.w3.org/WAI/GL/central.htm
- Alliance for Technology Access www.ataccess.org
- Speech to Text Software www.edc.org/spk2wrt
- Recordings for Blind and Dyslexic www.rfbd.org

Standards
Maryland
- http://www.mdk12.org
- http://mdk12.org/mspp/standards/index.html
- http://www.msp.msde.state.md.us/
- http://www.msde.state.md.us/
National
- http://www.ascd.org/
- http://www.ncrel.org/
- http://crlt.indiana.edu/
International Society for Technology in Education
- http://www.iste.org
- http://cnets.iste.org/index2.html
- http://www.iste.org/standards/
- http://cnets.iste.org/
- http://cnets.iste.org/teachstand.html

Goals 2000: Reforming Education to Improve Student Achievement. Reforming Background: Educate America Act
- www.ed.gov/pubs/G2KReforming

Lessons/units with ISTE' Indicators
- http://cnets.iste.org/search/index.html

Information Power: Literacy Standards
- http://www.ala.org/aasl/ip_toc.html

| 2 | Access to Print

Strategies for accessing print materials including scanning, use of text to speech tools internet based resources (etext), low tech to high tech adaptations of books

- Explore visual learning to organize information
- Explore picture communication symbols
- Explore text to voice software | **Required:**

- CPB/WGBH National Center for Accessible Media. (2000). *Making Educational Software Accessible: Design Guidelines Including Math and Science Solutions.* Boston, MA. WGBH Education Foundation. http://ncam.wgbh.org/cdrom/guideline/

- ERIC. Clearinghouse on Disabilities and Gifted Education. *What is "Universal Design" for Curriculum Access?* ERIC/OSEP Topical Brief Fall 1998 http://www.cec.sped.org/osep/ud-sec3.html

- Picture communication symbols http://www.mayer-johnson.com/

- Text to voice http://www.umich.edu/~sites/info/atcs/text/software_text.html

- Alliance for Technology Access (ATA). (1997). *Computer and Web Resources for People with Disabilities. ,* Chapter 2, 7, 9.

Recommended:

See references from session 1 +

- Interactive online survey and assessment tools - NCREL http://www.ncrtec.org/capacity/profile/profwww.htm
- Unified Web Site Accessibility Guidelines http://www.w3.org/WAI/GL/central.htm
- Alliance for Technology Access www.ataccess.org
- Speech to Text Software   www.edc.org/spk2wrt
- Text to voice http://www.apple.com/macos/speech/
- Recordings for Blind and Dyslexic www.rfbd.org |
| 3 | Access to Print cont.

Strategies for accessing print materials including scanning, use of text to speech tools internet based resources (etext), low tech to high tech adaptations of books

- Explore visual learning to organize information
- Explore picture communication symbols
- Explore text to voice software | **Required:**
- Closing the Gap presentation (2002). *Adapting activities and Increasing independence in inclusive settings using windows and microsoft office* http://www.rcs.k12.in.us/eses/closing_the_gap.htm
- Balagopal, S. & Young, P. (2002). *Increase independence of students with disabilities using windows and Microsoft word.* http://www.microsoft.com/enable/news/education.htm

Recommended:
See references above +

- Unified Web Site Accessibility Guidelines http://www.w3.org/WAI/GL/central.htm
- Alliance for Technology Access www.ataccess.org
- Speech to Text Software   www.edc.org/spk2wrt
- Recordings for Blind and Dyslexic www.rfbd.org |
| 4 | Available Devices and | **Required:** |

	<u>Services</u> • More Legal requirements • IEP exercise (Individual Educational Program) • Discuss and demonstrate "low tech" assistive technology solutions • Using Windows & Microsoft Office-accessibility features	• Types of available devices found at www.ablenet.com • Types of services found at www.gait.org • Windows accessibility features: www.microsoft.com/enable/ • Reed, P. (March 2001) *Resource guide for teachers and administrators about assistive technology.* http://www.wati.org/resourceguide.htm • Balagopal, Subhashini. (June 2001) *Adapting activities and increasing independence in inclusive settings using windows and microsoft office*. Richmond Community Schools. Richmond, Indiana. http://www.microsoft.com/enable/news/education.htm • Keyboard Shortcut Information: http://www.obs.org/cheatsheet/MSWord%20shortcutkeys.htm http://www.obs.org/cheatsheet/ieshortcut.htm • IEP software examples http://home.swbell.net/jraneri/edsoftware.html **Recommended: Great Resources**: • Teaching Learning & Computing - survey www.crito.uci.edu/TLC • LDRC Learning Disabilities Resource Community http://www.ldcommunity.org/ • Definition/description of disabilities as described in federal law IDEA 97 www.ed.gov/offices/OSERS/IDEA • National Center to Improve Practice (NCIP) www.edc.org/FSC/NCIP • Unified Web Site Accessibility Guidelines http://www.w3.org/WAI/GL/central.htm • Alliance for Technology Access www.ataccess.org • Speech to Text Software www.edc.org/spk2wrt • Recordings for Blind and Dyslexic www.rfbd.org

5	<u>Supporting Students in Learning Complex Material</u>
	
	• Identification
	  • With partner share IEP's developed
	  • Compare recommendations
	• Using Microsoft Office in Inclusion
	  • Discuss
	  • Practice
	• Portable keyboards
	  • Highlight and copy and paste text in a word processor/portable keyboard (Dreamwriter/AlphaSmart)
	  • Print
	• Word Prediction software
	  • Participants will create individual dictionary
	  • Participants will discuss pros and cons of word prediction software
		Required:
		• Educational Policy Reform Research Institute http://www.eprri.org/
		• Microsoft accessibility tutorials and resources http://www.microsoft.com/enable/products/default.htm
		• Struck, M. (1998). *Portable Keyboards*. From Resources From Learning Disabilities Community Website. http://www.ldresources.com/articles/portable_keyboards.html
		• Portable keyboard (price, options and types) comparison. http://gwiseman.home.mindspring.com/keys/keyboards.html & http://www.niad.sussex.ac.uk/browse_by_products_results.cfm?ID=3008
		• Mehlinger, H. & Powers, S. (2001). Technology in Special Education. In Technology and Teacher Education: A Guide for Educators and Policymakers. http://college.hmco.com/education/mehlinger/tech_and_teach_ed/1e/instructors/chapters/ch05/
		• What is word predication? From NCIP library http://www2.edc.org/NCIP/library/wp/What_is.htm
		Recommended: Great Resources:
		
		• Word Prediction Collection. From VCIP Library http://www2.edc.org/NCIP/library/wp/toc.htm

Examples of in class exercises and activities—activities not completed in class can be completed within WebCT

Session #1
Activity 1
Pre-Course Assessment/Survey- WebCT

Session #1
Activity #2
Scavenger Hunt Exercise- Public Laws related to Accessibility technology and disabilities

Session #1
Activity #3
Definition of "Assisitve Technology"
- List examples of assistive technology you are familiar with, have used etc….
- Definitions of Disability Terms exercise-within WebCT

Session #1
Activity #4
Respond to:
Federal laws require schools to place students with special needs in regular classrooms whenever possible. Sometimes, however, these regular classroom teachers feel unequal to the task of meeting the special needs of these students. Also, parents of non-disabled students raise objectives occasionally to the amount of time spent on special students. For some time, this has been the greatest issue in the field, and it will have consequences for curriculum development and implementation methods for the foreseeable future. Schools have tried to provide equal access to educational opportunities through mainstreaming, inclusion, and collaboration. Roblyer, M.D. (2000).

Session #1
Activity #5
How do the findings from your Scavenger Hunt (related to Laws) affect you in your classroom setting?

Session#1
Activity #6
Based on your findings from the Scavenger Hunt describe the direct impact on you with the trend toward mainstreaming and inclusion for all students, regardless of disabilities.

Session #1
Activity #7
Case Studies-scenarios- group activity

GUIDELINES FOR COURSE ASSIGNMENTS

Examples Of Online Assignments (**NOTE: Post these assignments no later than ONE day prior to each class session**):

Session #1:
Assignment 1-1:

Please post an introduction about yourself to the discussion board. Include:
- who you are, program in which you are enrolled, school district in which you teach, etc.
- your interests and reasons for taking this course
- your view of the role of technology in the classroom setting
- your view of the role of assistive technology in the general classroom setting
- experience in using technology and assistive technology in teaching
- experience in using an on-line environment

Assignment 1-2: Continue exploration of research on assistive technology in the classroom. Post a list of five additional high-quality Web addresses that you discover from your continuing research on this topic. Provide a one-sentence description of each Web resource you identify and then briefly discuss what impact this could have on you in your classroom setting.

Assignment 1-3: Post to discussion board a summary of your school. What population do you serve? (socio-economic/gender/ethnic/FARMS data/Title 1) How did your school perform on last year's state technology inventory? Based on last year's performance scores, what areas are of concern for your school? What percent of the school population are Special Education/special services? What technology and assistive technology devices are available in your school?

Assignment 1-4: Reading Reflection

Reflective Action Plan/Journal Entry

Session #2:

Exercise #1

NCRTEC Teaching Profile Instrument (on-line)

Session #2

Exercise #2

Sharing your school profile summary. Continue the discussion with your own school profile and classmates school profiles.

Session #2

Exercise #3

Hi-Low tech assessment- within WebCT

Session #2

 Exercise #4

Discuss barriers encountered in the classroom while attempting to meet the needs of students with disabilities-use past experience –share real class stories. Now that you have had time to reflect what you would have done differently-others should respond with suggestions or possible solutions.

Session #2

Exercise #5

Discuss practical applications of *Inspiration/Kispiration* for learning disabled or special population students

Session #2

Exercise #6
IEP exercise of "mock student" –within WebCT

Session #2

Exercise #7
Create an autographical visual web with *Inspiration/Kidspiration*-within WebCT

Assignment 2-1: Expand on your school profile and critique/review one other class members profile as assigned

Assignment 2-2: Case study scenarios- discuss barriers and possible solutions

Assignment 2-3: Reading Reflection

- **Post ideas regarding module project to instructor**
- **Reflective Action Plan Journal Entry**

Session #3
Exercise #1
Writing with Symbols 2000 text-to-picture-to-voice
- Use to accommodate reading comprehension
- Use to accommodate word recognition

Session #3
Exercise #2
Text to Voice software
- Participants will explore the copy and paste feature of *Write:OutLoud* to answer questions in complete sentences
- Insert a picture, use spell check and the dictionary function

Session #3
Exercise #3
Synchronous chat:
> Online forum with guest speaker to identify and discuss appropriate print material and strategies for converting print into a more accessible environment

Session #3
Exercise #4
- Scavenger Hunt
- Treasure Hunt

Assignment 3-1: Discussion of Scavenger Hunt

Assignment 3-2: Discussion of Treasure Hunt

Assignment 3-3: Reading Reflection
Discuss your interpretation of definitions/descriptions of AT and various disabilities as reflected by the class discussion and readings so far. Indicate impacts on you and students in your class.

- **Reflective Action Plan Journal Entry**

Session #4
Activity #1
Write an IEP (Individual Educational Program)
- Use *Excent* software or other IEP software (one your school uses or see free demos and freeware examples in reading section) to review the parts of an IEP
- List strengths and needs of a student

- Develop goals and objectives to address the needs

Session #4
Activity #2
Discuss AT devices and services through Internet resources
- Types of available devices found at www.ablenet.com
- Types of services found at www.gait.org

Session #4
Activity #3
Discuss and demonstrate "low tech" assistive technology solutions
- Create an individual dictionary to be used with word prediction software
- Use Microsoft windows accessibility features to assist students with disabilities effected by visual or modality issues
- Use Microsoft Office to create customized lines

Session #4
Activity #4
Guest speaker- on-line chat room

Assignment 4-1: Post IEP exercise of mock student and develop an instructional lesson plan meeting their needs, integrating some of the "low" tech devices discussed in class and review/critique classmates posting

Assignment 4-2: Reading Reflection

- **Continue the discussion/ dialogue on technology-enriched instructional units based on research on using technology with a special needs student (module project)**
- **Reflective Action Plan Journal Entry**

Session #5
Activity #1
With an assigned partner :
- Share the IEP you developed for a particular student. Compare recommendations.

Session #5
Activity #2
Possible Guest speaker: Reflective teaching

Session #5
Activity #3

Portable keyboards
- Highlight and copy and paste text in a word processor/portable keyboard (Dreamwriter/AlphaSmart)

Session #5
Activity #4

Word Prediction software
- Participants will create individual dictionary
- Participants will discuss pros and cons of word prediction software

Assignment 5-1: Group consensus and debriefing

Examples of Papers/Projects: Choose 3 from the following list

    a. **Using IEP software of your choice, develop an IEP for a current, past or "mock" student. List strengths and needs, and develop goals and objectives to address the needs. Using research on best practices in using assistive technology in teaching, use the lesson template provided to create and post a 5-E's lesson which incorporates assistive technology to enhance a particular content area (see attached template--include the personal assessment of AT enhanced activity) to accommodate the needs of a student with disabilities.**

    b. **Identify a specific special education population and level. Create instructional activities that integrate technology appropriately for that population and level. Each of these activities should meet the following criteria:**
        i. **Integrate one or more types of technology described in the course readings and discussions.**
        ii. **Show how to adapt this activity for large- and small-group instruction.**
        iii. **Describe the required preparation for this activity.**
        iv. **Describe the benefits you would hope to derive from technology resources in the lesson.**

    c. **Use presentation software to create a presentation that explains how each of the following current special education issues and trends affect the selection and use of technology.**
        i. **Recent federal legislation related to special education and individuals with disabilities.**
        ii. **Trends toward mainstreaming and inclusion for all students, regardless of disabilities.**
        iii. **Traditional emphasis on directed-instruction models and new emphasis on constructivist instructional models for various special education students.**

    d. **Choose a topic area pertaining to assistive technology (as it pertains to a specific disability, a particular type of assistive technology) and gather information from a minimum of 5 print resources and 3 internet resources in addition to course content.**

e. **Identify a specific education population and level. Using research on best practices related to using assistive technology in teaching, use the lesson template provided to create and post a 5-E's lesson or instructional activity which integrates technology appropriately for that population and level,** *and* **indicate how modifications for a particular student(s) can incorporate assistive technology.**

f. **Review the suggestions offered from class readings and discussion regarding "Goals for Gifted Programs/Assisitve Technology." Choose three goals and locate software applications that might be capable of assisting teachers and students in reaching the goals. Create and publish a list of software titles you have selected. The list should be presented in the form of a brochure that could be sent home to parents.**

g. **Use a hypermedia authoring program to develop a program to be used by a specific special population and level. It should be theme based and include a number a Web site links.**

Final Action Plan/reflection paper

Participants will develop an action plan summarizing earlier journal entries. The action plan should address issues related to lifelong learning or professional development extension activities in the area of assistive technology and evaluation strategies. Participants will identify building-based, local school system and state resources that support the appropriate identification and integration of assistive technology for students with disabilities. Participants will identify a network of local, state, and federal resources that support the appropriate identification and integration of AT for students with various abilities. More specifics will be discussed in class.

Suggested Template for Technology Enhanced Lesson Plan

Lesson Title :

Estimated time to complete:

Lesson objectives:

Concept(s) learned in this lesson:

Standards addressed in this lesson (content, technology standards):

Technology-enhanced instructional strategies utilized in this module:

Modifications made with Assistive Technology utilized in this module:

Components	Brief description of lesson activities	Student grouping (individual, paired, small group, whole class, etc.)	Materials/Technology
• Engagement			
• Exploration			
• Explanation			
• Extension			
• Evaluation			

5 E'S COMPONENTS AND EXAMPLES FOR BUILDING LESSON PLANS

Component	Examples
I. **Engagement**: Activities that capture student, attention, stimulate their thinking and help them to access prior knowledge.	• Demonstration by teacher and/or student • Reading from a current media release, science journal or book, piece of literature (biography, essay, poem, etc) • Analyzing a graphic organizer
II. **Exploration**: Students are given time to think, plan, investigate, and organize collected information	• Reading authentic sources to collect information to answer open-ended questions or make a decision • Solve a problem • Construct a model • Design and/or perform an experiment
III. **Explanation**: Students are involved in an analysis of information gained through exploration. Their understanding is clarified and modified because of reflective activities	• Student analysis and explanation • Supporting ideas with evidence • Reading and discussion
IV. **Extension**: Students expand and solidify their understanding of the concept and/or apply it to a real world situation	• Information learned is used to solve a real-world problem • Students classify new information or engage in error analysis
V. **Evaluation**	• Teacher and/or student generated scoring tools or rubrics are used to measure learning

Reflective Journal Entry Examples:

- In spite of the tremendous legal push in recent years toward assisting students with special needs and the obvious dedication of educators in the field, special education programs for mildly handicapped or learning disabled students have not shown much success in graduating employable people. IDEA (PL 99-457) inspired one strategy in which students identified with disabilities had to have Transition Plans (TPs) as well as Individual Educational Plans (IEPs) to show how their educational experiences help to prepare them for the world of work. How might technology resources help with the TE/IEP requirement?

- Previous laws implied the need to provide equal access to resources, but PL 101-336, commonly known as ADA, gave legal teeth to this requirement. How would you respond to the statement, that a major implication of ADA is that schools must be careful not to create *any* barriers for any children (special education students or others) as they configure technology systems. For example, if a school purchases an Integrated Learning System, it may have to provide adaptive devices such as special switches and voice recognition software to assure that all physically handicapped students at the grade level can use the instruction.

- Some schools, like those with a college preparatory focus, do not allow the use of instructional games of any kind. Is there a compelling case to be made for allowing the use of instructional game software to achieve specific educational goals? Related to assistive technology application? That is, can games do something in an instructional situation that no other strategy is able to do? If so, what?

- Word processing is a software valued by many teachers but is criticized by some who feel it is ruining our handwriting and making us over-reliant on technology to do our writing. How would you respond to these critics based on literature related to learning disabilities?

Reading Reflective Examples:

- *Many teachers stress that with technology, the student will get the right answer faster. The obsession with getting the right answer and producing high results on quantitative tests could result in severe reduction in the willingness for the student or the teacher to be creative. Creativity calls for a willingness to make mistakes or to produce results that lie outside the estimated norms. While there is software which encourages students to use their imagination, most of it emphasizes there is only one right answer. How can teachers encourage alternative, creative ways to arrive at a solution, when the equipment the students employ will only tolerate the most direct answer? (Vertees, Beard, & Pannell, 1977, p.34).*
  What do you think about this comment? Does much of the software used today actually student creativity? How does this statement relate to special education populations?

- *Although there are many arguments on both sides of the issue, it is apparent that new technologies can provide the tools to bring more children with disabilities into "regular" educational settings. In my opinion, Assisitve technology will certainly mainstream more and more children in wheelchairs, children who cannot physically speak, see, or hear, and children who need computers to write, organize, think, and function educationally (Behrmann, 1988).*

This is optimistic on the influence that assistive technology will have on children with disabilities. What do you think those on the other side of the issue would say?

- NCATE's document Technology and the New Professional Teacher (1997) said that, in addition to technology skills, teachers need an attitude that is fearless in the use of technology, encourages them to take risks, and inspires them to be life-long learners (p.4). What current factors and activities can help teachers develop such an attitude? What factors make it difficult for them to acquire it? What happens when knowledge related to assistive technology applications and modifications are added to the list?

Texts:

King, Thomas W. (1999). *Assistive Technology: Essential Human Factors.* Needham Heights, MA: Allyn & Bacon. ISBN 0205273262

Computer and Web Resources for People with Disabilities: A Guide to Exploring Today's Assistive Technology-3rd ed. Alliance for Technology Access, Foreword by Stephen Hawking / Paperback / Hunter House Inc. ISBN 0897933001

Secondary Texts: Optional

Cook, Albert M. & Hussey, Susan M. (1995). Assistive Technologies: Principles and Practice. St. Louis, MO: Mosby.

Journal Articles:

Akbaba, S. & Kurubacak, G., (1998). Teachers' attitudes towards technology. *Computers in Social Studies Journal* [Online serial], 7(4). Available: www.webcom.com/journal/akbaba.html

Alberta Learning. (2000). *Information and communication technology, kindergarten to grade 12* [Outline document]. Edmonton, AB: Author. Available: http://ednet.edc.gov.ab.ca/ict/.

American Library Association. (1998). Presidential Committee on Information Literacy. Final report. Chicago, IL: Author. Available: www.ala.org/acrl/nili/ilit1st.html . (ERIC No. ED 315 074)

Balagopal, S. "Adapting Activities and Increasing Independence in Inclusive Settings Using Windows and Microsoft Office", Richmond Community Schools, Presented at NECC, June, 2001.

Bohlin, R. (1993). Computers and gender difference: Achieving equity. *Computers in the Schools*, 9(2-3), 155-166.

Carpenter, C. (1996). Online ethics: What's a teacher to do? Learning and Leading with Technology 23(6), 40-41, 60.

Cifuentes, L. (1997). From sages to guides: A professional development study. Journal of Technology and Teacher Education, 5(1), 67-77.

Clark, K.D. (2000, Winter). Urban Middle School Teachers' Use of Instructional Technology. *Journal of Research on Computing in Education.* 33(2), 178-193.

Committee on Instructional Technology Literacy, National Research Council (1999). Being fluent with Instructional Technology. Washington, D.C.: National Academy Press [Online]. Available: http://stills.nap.edu/html/beingfluent/

Educational Testing Service. (1999). Does it compute? The relationship between educational technology and student achievement in mathematics [Online document]. Princeton: NJ: Author. Available: www.ets.org/research/textonly/pic/dic/dicfig6.html.

Haughland, S. (1997). Children's home computer use: An opportunity for parent/teacher collaboration. *Early Childhood Education Journal*, 25(2), 133-135.

Hoffman, J. L. & Lyons, D.L. (1997). Evaluating instructional software. Learning and Leading with Technology, 25(2), 52-56.

Lauman, J. L. (2000, Winter). Student home computer use: A review of the literature. *Journal of Research on Computing in Education.* 33(2), 196-203.

McAdoo, M. (1994). Equity: Has technology bridged the gap? Electronic Learning, 13(7), 24-34.

Miller-Lachman, L. (1994). Bytes and bias: Eliminating cultural stereotypes from educational software. School Library Journal, 40(11), 26-30.

Moonen, B., & Voogt, J. (1998, October). Teacher in-service training in networks: Results from the first phase. Paper presented at TelEd '98: ISTE's Seventh International Conference on Telecommunications and Multimedia in Education, New Orleans, LA. Available http://users.edte.utwente.nl/moonenb/paperteled98.htm

National Center for Education Statistics. (1998). *The condition of education 1998, indicator 3* [Online document]. Washington, D.C.: U.S. Government Printing Office. Available: www.ed.gov/pubs98/condition98.

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for education reform* [Online document]. Washington, DC: Government Printing Office. Available: www.ed.gov/pubs/NatAtRisk.

National Commission on Teaching and America's future (Summary report). *Teacher to Teacher.* Available: www.nbpts.org/nbpts/about/what-matters.html

Omoregie, M., & Coleman, B. (1996, March). Teaching infusion: The impact of technology infusion in creating quality instruction materials. Paper presented at the Annual National Conference on Creating the Quality School, Oklahoma City, OK. (ERIC No. ED 415 213)

Reed, Penny. "Resource Guide for Teachers and Administrators about Assistive Technology",
        <http://www.wati.org/resourceguide.htm>, March, 2001.

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