

**Santa Clara University
Department of Education**

ED272

Advanced Instructional Technology for Teachers

3 units

(Meets 3 hours a week for 10 weeks)

Prerequisites: (1) Preliminary credential, (2) ED271 – “Instructional Technology for Teachers”

SYLLABUS OUTLINE

Students participating in this course will experience lots of hands-on time with a variety of technology tools, focused on strategies for meaningful integration into classroom activities.

There are two complementary perspectives on the work to be accomplished. One is the use of computers and networks to enhance personal and professional productivity and in support of lifelong learning. The other is increased familiarity with theories (e.g., constructivism) and pedagogical strategies (e.g., project-based learning) that best integrate the use of technology in support of student learning.

The themes for this course are “information fluency” and “understanding complex systems.” *Information fluency* refers to the idea that students (and learners of all ages) must have the prerequisite knowledge, skills, and critical attitudes needed to successfully search for information in a variety of sources (including but not limited to the Internet), process large amounts of information efficiently and effectively, summarize relevant data, make sense of it in relation to existing frameworks, and communicate a personal synthesis through a variety of media formats. The need to understand *complex systems* is another organizing principle given the fact that life in the 21st century presents individuals, communities, states, and nations with unprecedented challenges in practically all spheres of human activity: social, political, economic, cultural, technical, and scientific both domestically and internationally. Thus, candidates will be asked to consider how their subject matter teaching can be designed to support students as they build their understanding of complex, real-world problems such as health care, the electoral system, state and federal budgets, the roles of mass media in society, the changes brought about by the growing presence of the Internet, the ethical and moral dilemmas arising from advances in medicine and biotechnology, and many others.

Candidates will be expected to not just read, observe, and listen in class but to be active, engaged participants in hands-on work and personal and collective reflective processes. As candidates deepen their exposure to pedagogical theories and examples of “best practice,” they will gain a better understanding of the possibilities for improved learning afforded by the meaningful integration of technology into daily classroom practice.

An explicit link throughout this course will be made to the state of California’s requirements detailed in the document titled “Standards of Quality and Effectiveness for Advanced Course Work for the Multiple Subject and Single Subject Professional Clear Teaching

Credential and Submission Guidelines for Approval of the Fifth Year of Study Program” (updated February 25, 2004). Candidates will be required to generate products that can serve as evidence of how they used technology in each of the seven areas addressed by the Standards.

Textbooks and Readings

There are several textbooks and other resources that could serve as valuable reference points, complementing the activities and issues addressed in each session with theoretical background and historical context. Three options are:

M. D. Roblyer, *Integrating Educational Technology into Teaching* (Third Edition). Columbus, Ohio/Upper Saddle River, New Jersey: Merrill Prentice Hall, 2003.

M. Grabe and C. Grabe, *Integrating Technology for Meaningful Learning* (Fourth Edition). New York, NY/Boston, MA: Houghton Mifflin Company, 2004.

P. Norton and K. M. Wiburg, *Teaching with Technology: Designing Opportunities to Learn* (Second Edition). Belmont, CA: Thomson/Wadsworth, 2003.

Additional readings from the research literature could include:

G. Salomon. (2002). Technology and Pedagogy: Why Don't We See the Promised Revolution? *Educational Technology*, March-April, 71-76.

M. M. Asselin & E. A. Lee. (2002). “I wish Someone Had Taught Me”: Information Literacy in a Teacher education Program. *Teacher Librarian* (30)2, 10-17.

Other readings could be assigned as needed for discussion of actual classroom practice, links to educational and learning theories, and connections to students' lived experience. For example, the Southwestern Educational Development Laboratory (SEDL) published six issues of a newsletter titled “TAP into Learning” between 1998 and 2002. These are available for free download through their website (www.sedl.org/pubs/tapinto) and can thus also serve as the basis of a classroom or homework activity that addresses the goals of this course (i.e., locating and evaluating information and resources available on the Internet).

Assessment

Students will generate individual and/or group products during each session. These products will be stored in each student's server-based electronic portfolio space (provided by the Department of Education's Electronic Portfolio Laboratory).

A rubric will be generated to address all different aspects of student work in this course: reading of assigned materials, participation in classroom activities, participation in the online discussion forum setup for this course, and midterm/final project assignments (e.g., a lesson plan).

SESSIONS 1 and 2

Reference: Requirement 1: Each candidate communicates through a variety of electronic media.

Introduction and overview. All students enrolled must have more than basic familiarity with technical aspects of computer use (e.g., identifying components, basic troubleshooting, cable connections) and working knowledge of at least one word processing application (e.g., Word, AppleWorks), spreadsheet (e.g., Excel, AppleWorks), presentation (e.g., PowerPoint, Keynote), electronic mail (e.g., Eudora, Outlook, Entourage, Mail), and web browsing (Netscape Navigator, Internet Explorer, Safari, Opera).

Setup: Each student has a network account with their own ID and password to store all materials (files) generated in this course.

Orientation on how to login to lab computers, how to login to private account on server, how to save files and where to save them (which folder in one's private directory).

Activities:

- Introduction to Web Logs (Blogs) as a reflection and communication tool.
 - Create a personal blog using Blogger.com and write one posting.
 - Make a note of the resulting URL

- Get a free email account from Yahoo, Google, or Hotmail
 - [Possibly, from the SCU Department of Education itself]
- Send an email message to the instructor with the URL of the blog site created above.

- Learn basic operation of digital photo camera: Take pictures, transfer them to a computer, do minor editing using iPhoto (cropping, adjust brightness/contrast, eliminate "red eye").
 - Create a slide show with accompanying music (e.g., for "portfolio" meeting or other demonstration purpose)
 - Organize photos into a book, select a theme, write brief comments for each page, and create a PDF file with the product.
 - Save PDF of book in personal account space

Portfolio Products:

- PDF of first posting in personal blog
- Copy of email sent to instructor with the URL for personal blog
- Photos taken with digital camera
- PDF of photo book created with iPhoto

Readings (required for Session 2): Grebe & Grebe, Chapters 1 and 7; Roblyer, Chapter 1.

SESSION 3

Reference: Requirement 2: Each candidate interacts with other professionals through a variety of methods, including the use of computer-based collaborative tools to support technology-enhanced curriculum.

Candidates learn about course management systems and their main uses and features. Discussion in class and online (“online discussion forum” within the course management system) on the benefits and challenges of collaborative learning

Activities:

Create account in the ANGEL system [or similar system hosted by the SCU Department of Education]. Explore basic functionality and features.

- Personal space
- Course features and services
- Discussions
- Chat

Guided exercise on participation in online discussion forums.

Other Online Channels:

- Instant Messaging (iChat or other IM service)
- Blogs (individual) and Wikis (collaborative)
- Online discussion forums hosted by non-profit organizations, newspapers, web sites, etc.

Technology-Supported Collaborative Learning:

- Collaborative, problem-based learning in the classroom (e.g., Tom Snyder Productions’ Decisions series)
- Internet-based collaboration among classrooms: SchoolNet’s Global SchoolHouse, I*EARN

Portfolio Products:

- PDF of “front page” of personal account in the ANGEL system
- PDF of at least one posting contributed to the online discussion forum

Reading: Grebe & Grebe, Chapter 5; Roblyer, Chapter 8.

SESSION 4 and 5

Reference: Requirement 3: Each candidate uses technological resources available inside the classroom or in library media centers, computer labs, local and county

facilities, and other locations to create technology-enhanced lessons aligned with the adopted curriculum.

Activities:

- Candidates will create an account in the CLRN (California Learning Resource Network) web site (www.clrn.org), download the lesson-planning template (MS Word), and explore some of the resources available at that site (lesson plans, software reviews, etc.).
- According to their intended grade level and subject-area focus, candidates will explore at least one CD-ROM or online encyclopedia (World Book, Encarta, Grolier) and generate a list of at least 3 articles, 3 photos, and 3 video clips that they would consider using in a lesson of their own design.
- Still working individually or in small groups, candidates will explore and generate a one-page report on 2 to 4 key web sites: Library of Congress, PBS, George Lucas Educational Foundation, New York Times, museum sites, and other CD-ROM and online references and resources.
- Groups of students will be asked to produce brief summary reports on assigned readings according to their focus area (e.g., language arts, social studies) for in-class presentation.

Portfolio Products:

- Word file with CLRN lesson planning template
- PDF of at least one lesson plan downloaded from the CLRN website, with accompanying 1-2 page document explaining why the candidate found the lesson plan relevant to their work
- Document listing the 3 articles, 3 photos, and 3 video clips candidates would consider using in their own lesson plan
- 1-page report on 2-4 key web sites, CD-ROMs, or other online/electronic resources
- Keynote or PowerPoint presentation of summary report on assigned readings resulting from small group work. (Each candidate will have to include a copy of the group's presentation in their electronic portfolio.)

Readings: Grebe and Grebe, Chapter 4. Also, according to level (multiple/single subjects) and content area of focus, students will be assigned one of the following chapters from Roblyer: 10 (Language Arts and Foreign Language Instruction), 11 (Mathematics and Science), 12 (Social Studies), 13 (Art and Music Instruction), 14 (Physical Education and Health Education), and 15 (Special Education).

SESSION 6

Reference: Requirement 4: Each candidate designs, adapts, and uses lessons that address the students' needs to develop information literacy and problem solving skills as tools for lifelong learning.

Activities:

- Review and discussion of directed and constructivist learning environments. Read and discuss on the concepts of "information literacy" and project-based learning.
- The Big6 skills model for Information Literacy

1. Task Definition
 - i. “What needs to be done?”
 2. Information-seeking strategies
 - i. “What can I use to find what I need?”
 3. Location and access
 - i. “Where can I find what I need?”
 4. Use of information
 - i. “What information can I use?”
 5. Synthesis
 - i. “How can I put my information together?”
 6. Evaluation
 - i. “How will I know if I did my job well?”
- Candidates continue to build their lesson plan on the CLRN website, and identify the instructor and at least one peer from class as a “Reviewer” for their lesson plan project.
 - Candidates will learn about the WebQuest methodology for Internet-based research by students. Individually or in small groups, candidates will explore existing lesson plans available via the Internet (see list under “Readings,” below) or in CD-ROMs (including those accompanying the selected textbooks)
 - In-class exercise: Candidates will participate in an instructor-designed WebQuest focused on the concepts of “project-based learning” and “information fluency/literacy”.
 - Working in small groups of 2-3 people, candidates will collaborate in the design of a WebQuest.

Portfolio Products:

- Lesson plan created using the CLRN template (as a Word document)
- Document (Word or other word processor such as AppleWorks) with group-designed WebQuest on “project-based learning” and “information fluency/literacy.” (Each candidate will have to include a copy of the group’s WebQuest in their electronic portfolio.)
- Each candidate will produce a 2-4 page report on their experience using the lesson plan developed during this course in their own classroom

Readings: Grebe and Grebe, Chapter 6; Roblyer, Chapter 3. Also materials from the Ozline website (<http://www.ozline.com/learning/>), including “Why WebQuests? An Introduction” (<http://www.ozline.com/webquests/intro.html>) and “The WebQuest Design Process” (<http://www.ozline.com/webquests/design.html>), both by Tom March.

SESSION 7

Reference: Requirement 5: Each candidate uses technology in lessons to increase students’ ability to plan, locate, evaluate, select, and use information to solve problems and draw conclusions. He/she creates or makes use of learning environments that promote effective use of technology aligned with the curriculum inside the classroom, in library media centers or in computer labs.

Activities:

- Working in small groups of 2-4 people, candidates will review the basics of digital video production (how to operate a camera; how to connect it to a computer; how to transfer the video; how to edit video; how to add titles, effects, and transitions; and how to export the finished product to a variety of formats for dissemination.
- Candidates will work in small groups to conduct a sample investigation addressing a complex-systems question (e.g., “How does the Internet work? How does an email message travel from a computer in the U.S. to one somewhere else in the world? What is the process to view a web page/web site created by someone in, say, Australia?”) Each group will have to produce a script (using a word processor) and a short (2-3 minute) movie presenting and illustrating their answer to the question. The movie will be saved in two formats: CD-ROM and video streaming.
- As an option or extension, groups can create a multimedia presentation using software like HyperStudio, TimeLiner, or PowerPoint, specifying that the product should include links to web sites, and perhaps also include one or more digital movies produced by the group.

Portfolio Products:

- Each candidate will have to include a copy of the movie produced by their group in their electronic portfolio, saved in QuickTime format for CD-ROM distribution.
- Additionally, each candidate will copy to their personal electronic portfolio space the movie in video streaming format, and make sure that the video is visible through a web browser when publishing the URL for the candidate’s electronic portfolio’s public space.

Readings: Grebe and Grebe, Chapter 8. Also, students will visit the web site “Videography for Educators” at: http://ali.apple.com/ali_sites/ali/exhibits/1000019/

SESSION 8

Reference: Requirement 6: Each candidate uses computer applications to manipulate and analyze data as a tool for assessing student learning, and for providing feedback to students and their parents.

Activities:

- Candidates will review the basics of database applications, and how to:
 - o generate different reports (views) on the data how to use information stored in a database program in a word processing document to produce customized form letters
 - o export data for charting and visualizing using specialized software.
- Candidates will also review using word processing templates for creation of classroom newsletters, and learn how to customize or personalize newsletter content with information from a database.
- Candidates will review the use of a spreadsheet application (MS Excel, AppleWorks) to keep track of attendance, grades, and other student information. They will also learn how

to use a spreadsheet as a database that can also export data into word processing documents.

Portfolio Products:

- Candidates will generate a small database using (1) Microsoft Excel and (2) AppleWorks containing fictitious data for at least five students. These files will be saved to their personal electronic portfolio space in both the application and PDF formats.
- Candidates will generate a form letter using (1) Microsoft Word and (2) AppleWorks, both of which make use of all the data fields in the Excel or AppleWorks databases to personalize the form letters (under a scenario that these are letters addressed to parents/caretakers reporting on their child's progress). This form letter will be saved to their personal electronic portfolio space in both the application and PDF formats.
- Candidates will save as individual files each of the letters generated from the mail merge operation from the database into the word processing document in both the application and PDF formats.
- Candidates will generate a spreadsheet file that could be used to track attendance, grades, and other relevant student information, and input fictitious data for at least five students. Candidates will then generate summary reports based on these data, including at least two types of graphs (e.g., bar graph and pie chart). The file will be saved to their personal electronic portfolio space in both the application and PDF formats.

Readings: Grebe and Grebe, Chapter 3; Roblyer, Chapter 5.

SESSIONS 9 and 10

Reference: Requirement 7: Each candidate demonstrates competence in evaluating the authenticity, reliability and bias of the data gathered, determines outcomes, and evaluates the success or effectiveness of the process used. He/she frequently monitors and reflects upon the results of using technology in instruction and adapts lessons accordingly.

Activities:

- Review the concept of "information literacy" as an overarching theme.
 - o Search engine review Beyond Browsing: Searching with Google and Other Engines.
 - Understanding the differences among search engines
 - Advanced (Boolean) searching
 - "The invisible web:" Library-accessible (fee-based) databases (e.g., Lexis-Nexis, etc.)

Assessment: Knowing What Students Know

- Rubrics as planning and assessment tools for multimedia, collaborative products and performances
 - o Designing a rubric from scratch: determining what's important
 - o Using rubric creation web sites

- E.g., Rubistar (<http://rubistar.4teachers.org/index.php>)

Portfolio Products:

- Candidates will create a 2-page report on a web search for information on the same topic (e.g., “Mars rover”) across at least 3 different search engines, reporting on the results of both a simple and an advanced (Boolean) search.
- Candidates will create a rubric for the lesson plan they have designed in this course, using the rubric-creation tool at the Rubistar web site (<http://rubistar.4teachers.org>). Candidates will save the rubric to their electronic portfolio space as a PDF file.

Readings: Grebe and Grebe, Chapter 9 (also, review Chapter 6); Roblyer, Chapter 4; G. Salomon, “Technology and Pedagogy: Why Don’t We See the Promised Revolution?” (2002).