

The Tek.Xam as a Framework for Preservice Foreign Language Teacher Technology Training

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Abstract: *At the undergraduate level, preservice training for future foreign language teachers usually consists of a one-semester course taken before student teaching. Given the enormous quantity of material a student must cover in the preservice course, we must ask: What educational technology components should be incorporated into that limited time? What criteria should we use to organize the lessons on technology so that students can apply them immediately in real-world classroom situations? This article offers the Tek.Xam, a national standard in technical literacy developed by the Virginia Foundation for Independent Colleges, as the framework for six technology modules that are integrated into a representative undergraduate foreign language methodology class.*

Introduction

With the increasing demand for accountability at all levels of the educational enterprise, all teachers, including foreign language teachers, will be expected to enter their classrooms fully prepared to integrate the latest computer technologies into their lesson plans. This requires that teachers of undergraduate, preservice foreign language methods courses review approaches to incorporating technology into an already overcrowded content mix of second language acquisition theories, methodologies, proficiency guidelines, national standards, learner types, lesson and activity planning, and classroom management. Are students being served well when it comes to technology integration? Are they acquiring the tools that they need to become successful practicing teachers? Are they truly prepared for the classrooms of the twenty-first century?

At first glance, the news appears positive. Statistics show that greater numbers of teachers have access to a wide array of technological choices when teaching their classes. The National Center for Education Statistics of the United States Department of Education publication *Stats in Brief: Teacher Use of Computer and Internet in Public Schools* (April 2000) highlighted some impressive findings: "... 99 percent of full-time regular public school teachers reported that they had access to computers or the Internet somewhere in their schools" (p. 1). In addition, "Sixty-six percent of public school teachers reported using computers or the Internet for instruction during class time" (p. 2).

With two thirds of public school teachers using computers in the classroom, it may seem that preservice teacher trainers have been preparing students well for their careers. A closer look at the numbers, however, tells a different story. The Department of Education report also noted that "when asked to focus specifically on the variety of potential uses of computers or the Internet in the classroom, 23 percent of public school teachers reported feeling well prepared and an additional 10 percent reported feeling very well prepared to use computers and the Internet in their teaching" (p. 2). The report also indicated that "less than 10 percent of teach-

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ers reported using computers or the Internet to access model lesson plans or access research and best practices" (p. 1). Although two thirds of teachers used computers in their classrooms, only one third felt well or very well prepared to do so.

In "The Technology Puzzle: Why Is Greater Access Not Translating Into Better Classroom Use?" Larry Cuban offers these surprising observations: "Out of every 10 teachers in this country, fewer than two are serious users of computers and other information technologies in their classrooms (several times a week); three to four are occasional users (about once a month); and the rest – four to five teachers out of every 10 – never use the machines at all" (p. 68). Cuban further emphasizes: "Of those same 10 American teachers, about seven have computers at home and use them to prepare lessons, communicate with colleagues and friends, search the Internet, and conduct personal business. In short, most teachers use computers at home more than at school" (p. 68). Why this gap between the use of technology in the home and the classroom? Is there a way to help practicing classroom teachers become more willing to integrate their technology skills into their lesson plans? Can preservice methodology instructors do something to alleviate this situation in the limited context of a one-semester, undergraduate methodology course?

For several years now, many of us who teach future foreign language instructors have been incorporating individual units on the classroom use of various new technologies into our methodology courses. Selection of topics has been predicated on our individual opinions of what our students will need to know once they start teaching. The results, however, have been hit or miss. As the use of technology in the classroom becomes more mainstream and expands its reach, the need for a comprehensive framework for coordinating the technology training that undergraduate, preservice teachers receive has become more imperative. The course needs to prepare students for their classrooms by following a clearly established, uniform, and specific set of guidelines. Where can we find that framework?

The first and most obvious place to look for direction for future teacher training is the state technology requirements for teachers in the school systems. In the Commonwealth of Virginia, for example, the Virginia Department of Education has set the following technology standards for instructional personnel:

- A. Instructional personnel shall be able to demonstrate effective use of a computer system and utilize computer software.
- B. Instructional personnel shall be able to apply knowledge of terms associated with educational computing and technology.
- C. Instructional personnel shall be able to apply computer productivity tools for professional use.

- D. Instructional personnel shall be able to use electronic technologies to access and exchange information.
- E. Instructional personnel shall be able to identify, locate, evaluate, and use appropriate instructional hardware and software to support Virginia's Standards of Learning and other instructional objectives.
- F. Instructional personnel shall be able to use educational technologies for data collection, information management, problem solving, decision making, communication, and presentation within the curriculum.
- G. Instructional personnel shall be able to plan and implement lessons and strategies that integrate technology to meet the diverse needs of learners in a variety of educational settings.
- H. Instructional personnel shall demonstrate knowledge of ethical and legal issues related to the use of technology.

Source: <http://www.pen.k12.va.us/VDOE/Compliance/TeacherED/tech.html>

Although these guidelines are clearly established and uniform, they are too general to provide a practical framework on which to base the development of lessons for preservice foreign language teachers in a typical one-semester, undergraduate foreign language methodology course.

The next logical source for an effective organizational framework is the International Society for Technology in Education's National Educational Technology Standards for Teachers. The General Preparation Performance Profile of the ISTE Standards describes the technological abilities that prospective teachers should master:

1. Demonstrate a sound understanding of the nature and operation of technology systems.
2. Demonstrate proficiency in the use of common input and output devices; solve routine hardware and software problems; and make informed choices about technology systems, resources, and services.
3. Use technology tools and information resources to increase productivity, promote creativity, and facilitate academic learning.
4. Use content-specific tools (e.g., software, simulation, environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research.
5. Use technology resources to facilitate higher order and complex thinking skills, including problem solving, critical thinking, informed decision making, knowledge construction, and creativity.
6. Collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works using productivity tools.
7. Use technology to locate, evaluate, and collect information from a variety of sources.

8. Use technology tools to process data and report results
9. Use technology in the development of strategies for solving problems in the real world.
10. Observe and experience the use of technology in their major field of study.
11. Use technology tools and resources for managing and communicating information (e.g. finances, schedules, addresses, purchases, correspondence).
12. Evaluate and select new information resources and technological innovations based on their appropriateness to specific tasks.
13. Use a variety of media and formats, including telecommunications, to collaborate, publish, and interact with peers, experts, and other audiences.
14. Demonstrate an understanding of the legal, ethical, cultural, and societal issues related to technology.
15. Exhibit positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
16. Discuss diversity issues related to electronic media.
17. Discuss health and safety issues related to technology use.

Source: <http://www.iste.org>

A careful review of this list reveals that the ISTE requirements do indeed incorporate several more specific technology recommendations than those addressed by the Commonwealth of Virginia state standards. Yet, because they target students in the “general preparation component of their program,” they also include numerous suggestions that do not fall into the scope of a one-semester, undergraduate foreign language methodology class. The broad definition of “technology” used in the ISTE standards also hinders the transference of specific applications of technology to the teaching of foreign languages.

As a faculty member at one of the member institutions of the Virginia Foundation for Independent Colleges (VFIC), I was aware that some of my computer science colleagues were working on a technology examination that would serve as a national standard of technical literacy for students — a means of assessment that could grant students appropriate credentials in technology for future employment. Their work became the *Tek.Xam*. This exam has been characterized as follows:

The *Tek.Xam* assessment examination is a unique test measuring technology and problem-solving skills within the technological environment. It is an internet-based, vendor-neutral test delivered online in a proctored computer lab. (<http://www.tekxam.com/index.htm>)

Conceptualized by Chairman Mark Warner

(1999–2000), the *Tek.Xam* test was developed beginning in the fall of 1997 by technology faculty and administrators from VFIC’s 15 colleges and 20 human resource executives from VFIC trustee companies. (VFIC, p. 13).

Recognized by a growing list of prominent employers, the *Tek.Xam* credential provides a way for college students, and those already in the workforce, to demonstrate their mastery of technology applications and problem-solving tools. (<http://www.tekxam.com/index.htm>)

The objectives of the *Tek.Xam* are divided into two general categories:

- A. Understanding the Operation of Technology
 - Computer hardware capability, design purpose, and interrelation among peripherals
 - Computer software capability
 - Computer network concepts and terms (including internet)
 - Operating system concepts and terms
 - Legal and ethical issues in the technology field
- B. Using Technology to Retrieve, Interpret, and Present Information
 - Word processing, spreadsheets, presentation software, and Web design
 - Searches using electronic resources
 - Assessing the usefulness and accuracy of information
 - Internet concepts and terms
 - Efficient utilization of technology tools
 - Problem solving in the work environment

Source: <http://www.tekxam.com/objectives/objectives.htm>

Each of these objectives is subsequently broken into very specific subcategories. A complete outline of is available at <http://www.tekxam.com/objectives.pdf>.

In the fall of 2000, I decided to base my undergraduate, preservice foreign language teachers’ technology training during their one-semester methodology course on elements of the *Tek.Xam*. Using the clear, uniform, specific objectives of the *Tek.Xam* as a starting point, I developed a series of six technology modules that I incorporated into my foreign language methodology course. Each module contained particular *Tek.Xam* subcategory objectives, along with an assignment for an immediate, real-world application of the technology to the foreign language classroom. Each module served as a separate, individual unit and was presented during a 90-minute class period held every other week in a multimedia classroom where activity and discussion centered entirely on the uses of technol-

ogy in the teaching of foreign languages. I introduced each of the six modules and demonstrated all applications and illustrations with examples of work I had done in my own French classes. The six class sessions were held in a well-equipped, multimedia classroom that featured high-speed Internet access, Microsoft Office Suite, and audio and video projection systems (see Appendix A for a description of the six technology modules).

The 2000 *Stats in Brief* report suggests that classroom teachers have not been using technology efficiently “to access model lesson plans or access research and best practices” (U.S. Department of Education, 2000, p.1). Thus, one of the most important initial lessons for a preservice methodology course is to equip students with tools for discovering ways that others have used technology successfully in the classroom.

Accordingly, the first module in the foreign language methods course consists of a two-part exercise on the World Wide Web and electronic resource research capabilities. The first section of the module focuses on the Tek.xam objectives of defining effective research questions, using browsers and search engines appropriately, and analysing the credibility and persuasiveness of material found on the Web. The second part of the lesson emphasizes using the electronic resources available in a modern university library. As Kassen and Higgins (1997) underscore, it is imperative that “teachers see practical applications for technology” (p. 265). With this goal in mind, students are asked to locate specific information for use in their classrooms and to keep a log that details how they found appropriate Web sites and to assess the information at those sites. The second part of the module essentially repeats this process using electronic library resources and asks students to write a critique of a full-text article that they have located on any aspect of foreign language teaching. This module establishes a comfort level for students as they work with the technology and lays a foundation for the lessons to come.

As Kassen and Higgins demonstrate, the ability of practicing classroom teachers to assess appropriate software and become at ease using it is essential to today’s modern foreign language classrooms. Given their easy availability and relatively low cost, prepackaged foreign language software programs are among some of the most ubiquitous technology tools used in K to 12 foreign language teaching. The second module of the preservice, undergraduate methodology course centers on the evaluation and classroom use of commercial software. The Tek.Xam points covered include the difference between productivity software and operating systems and legal and ethical issues in technology such as copyright, fair use, intellectual property, licensing agreements, patents, and software policies. In this module, students are introduced to and discuss the possi-

ble classroom uses of foreign language CD ROMs (e.g., *Le Louvre*, *Nuevos Destinos*). They are then given a copy of the French or Spanish language version of the program “Triple Play Plus” to use in their work. They are instructed to experiment with this software until they fully understand its capabilities and potential uses. The students then write a software evaluation of “Triple Play Plus” by following a specific set of assessment guidelines. This module provides preservice teachers with the tools they will need to make informed choices about commercial software packages for use in their foreign language classrooms.

Second only to commercially available software packages in widespread use, the Internet has become a basic teaching tool for foreign language teachers. Gonglewski (1999) discusses many of the extensive possibilities that the Internet affords the foreign language teacher and provides excellent examples of Internet-based, classroom activities for each of the five Cs of the National Standards (1999). In addition, it is essential that foreign language teachers have access to real-world materials for use in the classroom, and, as Nielsen and Hoffman put it, “The Internet...is a foreign language teacher’s dream come true and a magnet drawing new and relevant content into the school curriculum” (p.122). Given these objectives, the third technology module focuses on locating and using Internet resources. Many of the Tek.Xam goals related to conducting effective Web searches that are covered in the first module are reiterated here. In this lesson, greater emphasis is placed on Web site author bias, credibility and accuracy of information, and Web site persuasiveness. In addition, the Tek.xam requirements of understanding Internet concepts and terms (e.g., hypertext, hyperlink, URL, listserv, and domain names) and the difference between the World Wide Web and the Internet are covered.

This module requires students to compile a list of five French or Spanish language Web sites on a single topic of their choice that could be used as the basis for a typical language lesson in a first-year language course. Students are directed to justify why each Web site is appropriate for inclusion in their list. Students must then design a lesson/activity that integrates material from each of the five Web sites that they have found. The assignment directions also suggest that, given an understanding of the inherent biases of Web sites, students would do well to explore the Web sites of well-known foreign language textbook publishers. At these sites, students may find well-planned, exciting Internet exercises and relevant foreign language links grouped by category; the activities provided can be used as is or adapted for the specific classroom. Module 3 allows students to experiment with locating and assessing Internet resources as foundation materials for culturally accurate and engaging foreign language lessons.

With an increase in the use of visual aids to support

student learning styles and preferences, presentation software has taken on a new prominence in many foreign language classrooms. The fourth technology module for undergraduate, preservice teachers deals with graphics manipulation and the use of *Powerpoint* slides in the foreign language classroom. The Tek.Xam requirements direct students to “design a presentation suitable for a specified audience.” To do that, the Tek.Xam outlines specific presentation software manipulations such as creating bulleted lists, animating text, and importing specific graphics. Students must demonstrate their mastery of the Tek.Xam goals by developing a series of *Powerpoint* slides for the class activity that they created in module 3. They must include images and links to the Web sites they incorporated into the lesson. In addition, students must write a process piece describing how they would use these slides in an elementary-level language course. Through the use of *Powerpoint* presentation software, module 4 compels students to evaluate and comprehend how visual aids affect learning in the foreign language classroom and how to use them in the most effective manner to achieve their pedagogical goals.

The fifth technology module for preservice foreign language teachers serves as an introduction to writing and incorporating Web pages into the foreign language classroom. As a growing number of student-generated Web pages on the Internet attests, the writing of Web pages by individual students, groups of students, or whole classes is becoming a popular way for students to collect, integrate, and demonstrate their understanding of research information on a given topic. This is, of course, true for foreign language classrooms as well. Although, many high school students continue to learn hypertext markup language, the wide availability of Web page editors has made the need for learning HTML all but obsolete. To guide their students in Web page activities, practicing classroom teachers today need to be able to develop Web pages and sites quickly and efficiently. Given the platform neutrality of the Tek.Xam objectives, the students in a methodology course might use any Web editing software (*Frontpage*, *Go Live*, *Word Web Editor*, etc.) to design and create a site for this module. The Tek.Xam goals for Web design include developing a Web site with elements such as a home page, clip art graphics, e-mail link, and links to other Web sites for a specified audience. Students are called upon to develop and demonstrate a Web page designed for an elementary language course that includes images and links to other sites that support the activity. Students must also write a description of how they would use this Web page in their classrooms. The fifth module furnishes students with the basic resources for developing and integrating Web pages for foreign language instruction.

The final technology module for the undergraduate,

preservice foreign language methodology course centers on the use of spreadsheets for teachers. Although it may not play an active role in the foreign language classroom, as Hatasu (1999) suggests, the spreadsheet grade book is a very practical application for teachers. Following the Tek.Xam guidelines related to creating a graph of students' grades, recognizing patterns in the data, and composing a narrative that describes the spreadsheet trends, this module asks students to go beyond the simple manipulation of the spreadsheet application and analyze trends (of an imaginary group of students). The ability to develop graphs and verbalize the trends and patterns that they demonstrate compels the preservice student teacher to understand his or her students better and to conceptualize the communication process that will take place between student and teacher and teacher and parent.

The use of the Tek.Xam as a framework for the technology modules affords students in an undergraduate foreign language methodology course four distinct advantages.

First, the Tek.Xam objectives are very specific and uniform in their requirements and their application fulfills the general technology standards requirements for teachers in the Commonwealth of Virginia. Thus, preservice foreign language methodology students who successfully complete these technology modules would not require remedial training in technology to become certified for employment in the public schools.

Second, the Tek.Xam objectives, although very specific in nature, are nonetheless flexible enough to be applied to real-world classroom situations for foreign language teachers. By linking the detailed requirements of the Tek.Xam to practical uses of technology for the foreign language teacher, students can draw on their technical knowledge and experience and apply it to other educational situations.

Third, the Tek.Xam framework lends credibility to a systematic program of technology study in the preservice foreign language methodology course. Often students in methodology courses do not see the need to cover the integration of technology into the foreign language classroom. With the Tek.Xam as a guide and with real-world educational applications, the students grasp immediately how essential technology integration is to the foreign language classroom and are eager to use what they have learned in their student teaching.

Finally, concept of the Tek.Xam as an assessment instrument that certifies an individual's technological skills for future employment impresses upon students the very real need to learn and understand technology, because it will be a required part of any job they hope to hold the future. Taking the Tek.Xam, for which students are well prepared for by the six technology modules in the foreign

language methodology course, may help foreign language education majors compete more favorably in the job market. Thus, using the Tek.Xam as a framework for the technology modules in an undergraduate, preservice methodology course demonstrates to students the necessity and practicality of integrating technology into their future classrooms and makes them confident that they have the tools and experience to be successful foreign language teachers.

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Appendix A

Technology Modules

Technology Module 1

Tek.Xam Objectives

Students will be able to determine the information requirements for a research question.

Students will be able to execute web searches on specified topics.

Candidates use an Internet browser and search engine of their choice to find answers to a set of questions.

Students will be able to formulate and conduct effective searches of Internet resources.

Students will be able to access Web sites using a Web browser.

Students will be able to distinguish between a search engine (e.g., Alta Vista) and a web directory (e.g., Yahoo!)

Candidates determine bias of Internet sites, evaluate quality of information available on those sites, and determine the perspective of the Web site creator.

Students will be able to assess the usefulness and accuracy of information gathered in searches.

Analysis skills

Students will be able to:

- determine the bias of Web sites
- assess the credibility of information contained in a Web site
- assess the accuracy of information contained in a Web site
- determine if a web site is persuasive or non-persuasive.

Section A

Questions

- A. You are looking for ways to integrate the World Wide Web into your beginning French classes. Find some helpful suggestions on the Web.
- B. You are presenting *Destinos* as a possible selection for use in your school. Find information about it on the Web to use in your presentation.
 1. First determine the information requirements for your research question.
 2. Locate four Web sites relevant to your question. Use at least one search engine and at least one Web directory and the browser of your choice.
 3. Keep a log of the steps you took to locate each of your four Web sites to answer your question.
 4. For each Web site that you locate:
 - a. Give the URL.
 - b. Write a brief description of the site.
 - c. Determine the bias of the Web site. Give reasons for your assessment.
 - d. Assess if the information is credible. Give reasons for your assessment.
 - e. Assess the accuracy of the information provided. Give reasons for your assessment.
 - f. State whether you found the site to be persuasive or nonpersuasive. Give reasons for your assessment.

Tek.Xam Objectives

Students will be able to determine the information requirements for a research question.

Students will be able to formulate and conduct effective searches of electronic resources.

Section B

1. Using the electronic resources available through the university Web site, locate five recent (post-1998) journal articles that pertain to any aspect of teaching foreign languages that interests you.
2. List the articles using the full MLA citation (see MLA sample citation handout) for each article.
3. Locate the full text of one of the articles (in the university library, online, or through interlibrary loan) and use it to write your first critique (hand in on Tuesday, September 26, 2000). For instructions on the format for written critiques, see our class blackboard site.

Technology Module 2

Tek.Xam Objectives

Students will demonstrate an understanding of computer software capability and be versed in its uses.

Students will distinguish between productivity software and operating systems.

Students will demonstrate an understanding of legal and ethical issues in the field of information technology: copyright, fair use, intellectual property, licensing agreements, and software policy.

Students will recognize that patents provide protection for software.

Students will be able to determine which technology tools are most efficient to interpret information.

Students will be able to determine which technology tools are most efficient to present information.

Foreign Language Software Evaluation

Using the CD-ROM for “Triple Play Plus-French/Spanish” provided for you in class, prepare a complete evaluation of the software. Follow the guidelines below.

1. Product description
 - a. Program title
 - b. System requirements
 - c. Publisher
 - d. Price
 - e. Content
 - f. Authors
 - g. Audience
 - h. What is the licensing agreement?
 - i. Who holds the copyright?
2. Summary (a general assessment of what the software does and how it is used.)
3. Contents (a more detailed, step-by-step breakdown of how the software is used and what elements it contains.)
4. Evaluation (includes assessment of how the particular software package would or would not be useful in a foreign language classroom. How would you recommend teachers incorporate the use of the product in the teaching of the foreign language?)

Technology Module 3

Tek.Xam Objectives

Students will be able to determine the information requirements for a research question.

Students will be able to execute Web searches on specified topics.

Candidates use an Internet browser and search engine of their choice to find answers to a set of questions.

Students will be able to formulate and conduct effective searches of Internet resources.

Students will be able to access Web sites using a browser.

Students will be able to distinguish between a search engine (e.g., Alta Vista) and a Web directory (e.g., Yahoo!).

Candidates determine bias of Internet sites, evaluate quality of information available on those sites, and determine the perspective of the Web site creator.

Students will be able to assess the usefulness and accuracy of information gathered in searches.

Analysis skills

Students will be able to:

- Determine the bias of Web sites
- Assess the credibility of information contained in a Web site
- Assess the accuracy of information contained in a Web site
- Determine if a Web site is persuasive or nonpersuasive
- Students will understand Internet concepts and terms: hypertext, hyperlink, URL, Internet, listserv
- Distinguish between the World Wide Web and the Internet
- Recognize URL suffixes (e.g., .au)

Students will be able to determine which technology tools are most efficient to retrieve information.

Students will be able to discern the best electronic or printed source for a given research question.

Internet Resources for Teaching Foreign Languages

- A. Using your choice of Web browser and a combination of French-language/Spanish-language search engines and Web directories, compile a list of five French-language/Spanish-language Web sites on a single topic of your choice that could be used as a base for a typical lesson in a beginning-level French or Spanish course. Make a list of the sites you select. In your list, give the site name and the URL for each of the five Web sites and, in parentheses, state the Web directory or search engine that you used to find it. Along with each site, give the reasons why you chose it. [Hint: You may need to adjust, narrow, or expand your topic in order to find five good, suitable sites for use in a beginning-level language class.]
- B. Design a lesson/activity for your French/Spanish class that integrates material from each of the five sites that you have found. [Hint: Look at the sample lessons given for the textbooks for sale at the Heinle.com site.] Give a good, complete description of exactly how you would use the material on your five selected French-language/Spanish-language Web sites.

Technology Module 4***Tek.Xam Objectives***

Students will demonstrate proficiency in word processing, spreadsheets, presentation software, and Web design

Presentation Software

Students will be able to:

- Chose a slide template with a light background.
- Enter text
- Position text
- Format text font and point size
- Create a slide with a bulleted list
- Import a specified graphic
- Import student-specified graphic
- Animate text
- Save a document to disk

Analysis skills

- Design a presentation suitable for a specified audience.
- Determine which technology tools are most efficient to present information.

Powerpoint for Class Presentations

Develop a series of four to eight *Powerpoint* slides for the class activity you described in Technology Module 3. You must include appropriate images and links to some of the Web sites that you incorporated into the lesson that you designed. Write a short paragraph describing how you would use these slides in an elementary French-language course. Turn in both your *Powerpoint* presentation file and a separate *MS Word* text file with your explanatory paragraph on the diskette provided in class.

Technology Module 5***Tek.Xam Objectives***

Students will demonstrate proficiency in word processing, spreadsheets, presentation software, and Web design.

Web design

Students will be able to create a Web site with the following elements:

- Home title page
- Clip art graphic
- Link to send e-mail
- Links to other Web sites
- Save Web site to disk

Analysis skills

- Target links to Web sites for a specified audience.

Students will be able to determine which technology tools are most efficient to present information.

Web Page Design and Use

Develop a Web page for a class activity or lesson in an elementary French/Spanish-language class. You must include images and several links to other Web sites that support or are used in the activity or lesson you devise. Write a short paragraph describing how you would use this page in an elementary French/Spanish-language course. Turn in both your Web page and a separate MS Word text file with your explanatory paragraph on the diskette provided in class.

Technology Module 6

Tek.Xam Objectives

Students will demonstrate proficiency in word processing, spreadsheets, presentation software, and Web design.

Spreadsheets

Students will be able to:

- Enter text and numbers into cells
- Resize columns and rows
- Insert and delete rows and columns
- Enter formulae, including built-in functions like MIN, MAX, and AVERAGE
- Create bar chart from spreadsheet
- Label axes
- Label data elements
- Add title to chart describing data displayed
- Recognize the difference between relative and absolute references (formulas)
- Save a document to disk

Analysis skills

- Recognize trends or patterns in spreadsheet data (increase, decrease, static)
- Calculate weighted averages
- Compose a narrative that describes spreadsheet patterns and trends

Students will be able to determine which technology tools are most efficient to present information.

Spreadsheet Grade Book

Create a spreadsheet grade book using the data for the three students supplied on the next page. Be sure the student names are in alphabetical order. Use the following grading guidelines for the course: Tests = 30% of grade, Compositions = 30% of grade, Quizzes = 20% of grade, Final exam = 20% of grade. Your spreadsheet grade book should be four worksheets long with the first worksheet acting as a summary of the averages of the students' grades and the calculation of their final grade for the class using the weighted averages as indicated above. In a separate Word document, compose a narrative that describes how each student did in the course. Indicate any patterns or trends that you recognize from the data for each student. Include at least one correctly titled and labeled (both axes and all data elements) bar graph for each student to support the trend analysis that you observe. Save both your spreadsheet grade book and narrative to disk and hand in.