Instructional Design Proposal for Technology in Education: EPSY 240

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Introduction

This document describes an instructional design project undertaken to examine the needs of and potentially to provide technology instruction for pre-service teachers enrolled in EPSY 240. This is a one-unit course currently being taught in School of Education in a major university in the Northeast. The proposed design of a new course for EPSY 240 was prompted by the following two factors:

1. Student Input: Reviews of student evaluations showed that students previously enrolled in EPSY 240 were not pleased with the organization and structure of the course and expressed concerns about course expectations as well as the lack of practical knowledge they received because of taking this course.

2. Instructor Perception: Reports from the professor who teaches EPSY 240 indicated a possible need for the development of instructional supports above and beyond the current face-to-face interactions of students in the course that may enhance student learning as they progress through the course.

To assist in the proposed design of EPSY 240 that follows, we addressed the question "What are the needs of the end users of ESPY 240, namely, the students enrolled in and the faculty that teach within the Integrated Bachelor's/Master [IB/M] Teacher Preparation Program at the University of Connecticut?"

Overall Study Methodology

We followed an instructional system design methodology (Clark, 1998), which is a synthesis from Dick and Carey (1996) and has these major phases:

- Analysis – Performing a need assessment to identify course requirements.
- Design – Creating a design responsive to the need requirements.
- Development – Creation of course content as specified by the design. Part of this process involves formative evaluation.
- Implementation – Actual teaching of the course.
- Evaluation – A summative evaluation of the course.

The first three phases can be carried out somewhat in parallel, with developments in one phase informing those in the other phases.

This study focused upon and developed the analysis in detail, and which involved these elements:

- Hypothesis – Develop hypothesis to be investigated.
- Methods – Identify methods suitable for acquiring data to test the hypothesis.
- Instruments – Create instruments suitable for implementing the methods
- Data acquisition – Use the instruments and apply the methodology to gather data.
- Analysis of data.
- Results of data analysis and recommendations of the need analysis.

Other sections of this document discuss the above items in detail.

Status of the Study

The analysis was performed in great depth and we believe is reasonably complete. We have a preliminary design, which addresses all major aspects of the course, but is lacking in details for most of the course. We do have detailed designs for about a third of the course overall. We have developed about 10 to 20% of the course in detail.

Theoretical Framework

Guided by the data we received as described in the methodology section that follows and Hannafin's criteria for "grounded practice for instructional design" as outlined by Wilson & Myers (in Jonassen & Land, 2000, p. 79), our team set out to design a course grounded in three theoretical perspectives, namely constructivism, zone of proximal development and case-based reasoning. In addition, individual lessons were loosely guided by Gagne's nine events of instruction and pedagogical aspects of constructivism. In keeping with Hannafin's approach to instructional design, our team also preferred a "menu or toolbox metaphor" (p. 82), and thus chose to design the course grounded in a combination of these four approaches; always keeping the authentic and diverse needs of students [the end-user] in mind, instead of the pure assumptions of one single perspective. Below you will find a brief description of the basic assumptions of each perspective and how we combined these elements to provide the structure for the proposed EPSY 240 course.

Constructivism

Constructivism, as a learning theory, assumes many different things about learners and knowledge. First, constructivists believe that knowledge is constructed from active experience and is personally unique. Similarly, they suggest that knowledge supports multiple and diverse

perspectives (Perkins, 1992; Duffy & Jonassen, 1992). Second, constructivists agree that meaning is socially constructed and situated in "cognitive experiences about authentic activities" (Duffy & Jonassen, 1992, p. 4). Constructivist perspectives also assume that learners are self-directed individuals who are in control of the specifics of what they learn and guided by their self-motivated needs to learn. Self-directed learning abilities "help people to grow intellectually by adapting and applying knowledge to new situations, as well as by recognizing the need to move beyond one's current knowledge state to a new level of understanding" (Hmelo & Lin, p. 227, in Evenson & Hmelo, 2000). Later in our paper, we will illustrate the various ways that our proposal for ESPY 240 supports these constructivist assumptions.

A final tie to connection to constructivism lies in our interpretation of the overall goal of instruction, which from a constructivist perspective, is concept development and deep understanding. The design team is cognizant of the fact that the course goal for EPSY 240 is "to develop an awareness of the broad range of educational technologies and their potential for integration into the K-12 classroom." However, we believe that opportunities for reflection through journal writing, online discussion prompts and collaborative sharing during lab sessions are important activities even at this awareness level that can help EPSY 240 students begin to explore a deeper understanding of how the unique needs of students and the curriculum drives technology use and not the other way around. In our opinion, reflection and critical analysis moves students beyond the simple awareness level of regurgitating hardware, software and Internet specifications and into the mindset of one day working with real students in real classrooms with very unique needs.

Vygotsky's Social Constructivism and Zone of Proximal Development

"Vygotsky's theory of social constructivism", Tam (2000) explains, "as opposed to Piaget's individualistic approach to constructivism emphasizes the interaction of learners with others in cognitive development". In our course proposal, we too attempt to move beyond meaning construction at an individual level by providing several opportunities for students and teaching assistants to share their own experiences and reflect on their own areas of interest and concerns about using technology in the classroom. Similarly, many of the support materials and learning tasks we have proposed for this course reflect Vygotsky's concept of the zone of proximal development, that is, "the amount of learning possible by a student given the proper instructional conditions" (Schunk, 2000, p. 244). We've included a companion website and many supports for teaching assistants to draw from to help create a learning environment that challenges students to explore topics and technical skills that may stretch just a little beyond their comfort level. These supports are examples of Vygotsky's related concept of instructional scaffolding, which refers to the "process of controlling task elements that are beyond the learners' capabilities so they can focus on and master those features of the task that they can grasp quickly" (Schunk, 2000, p. 244).). This type of support is a key element of Lev Vygotsky's psychological theory of how social meaningful activity and the environment influences learning. Schunk (2000) writes that Vygotsky's theories have greatly affected modern constructivist thinking, and so, given the discussion above, it would make sense that we would include aspects of instructional scaffolding in the design of our course proposal for ESPY 240.

Case-Based Reasoning

Case-based models of learning attempt to represent abstract concepts in concrete 'cases' or "interpretations of [one's] experiences that are applied to new situations" (Kolodner &

Guzdial, in Jonassen & Land, 2001, p. 215). An individual who uses case-based reasoning is "engaged in recording its experiences, interpreting its experiences to derive lessons useful to its future, anticipating when those lessons might be useful, and labeling its experiences appropriately so that it will be able to recognize the applicability of an experience in a later situation. (Kolodner & Guzdial, p. 216). Although our team's proposed design of EPSY 240 does not include all the major elements of case-based learning experiences, later in this paper, we'll discuss several of the course features that were designed after considering the value of supporting learning with contextualized, case-based authentic experiences

Gagne's Nine Events of Instruction

Included in Gagne's cognitive psychology theories about how learning takes place are what he called phases of learning, which he divided into nine sequential steps known as events of instruction. "Typically, instruction consists of a set of events external to the learner designed to support the internal process of learning" (Gagne, Briggs & Wager, 1992, p. 189). Instructional events are a way of relating what is going on within the learner whenever learning is taking place so that instructional design can take place at the level of individual learning (as opposed to a more abstract level of theoretical perspectives, for example). "In a basic sense, these events constitute of *set of communications to the student*" (Gagne, Briggs & Wager, 1992, p. 186). Our design team has proposed a structural outline for each lesson that includes elements loosely modeled after the lesson framework set forth in Gagne's model of the Nine Events of Instruction, namely, "a set of events external to the learner designed to support the internal process of learning" (Gagne, Briggs, & Wager, 1992, p. 189). As will be discussed later, this framework was used to organize learning tasks for students enrolled in the course and to communicate to

teaching assistants the importance of keeping different lab sessions somewhat consistent in the coverage of topics.

Methodology

In order to find out the needs of the end users including the Integrated Bachelor's / Master's [IB/M] Teacher Preparation Program students, and the instructors who were teaching the course, the EPSY 240 instructional design team asked a series of questions (see Appendix). The questions posed required a qualitative perspective, which seeks to ascertain what elements of EPSY 240 are important and what are irrelevant; therefore, ethnographic research methods are appropriate for this study. These questions focused on participants' perspectives (Erickson, 1986) and the hidden agendas carried in both Educational Psychology Department and Department of Education Curriculum and Instruction.

According to Bogdan & Biklen, research should "illuminate the inner dynamics of the situations" (1992, p. 32). Ethnography is the work of describing a culture, and in this instance, the culture's involvement with EPSY 240 at different hierarchical levels of the departments of Educational Psychology and Curriculum and Instruction. A cross comparison of statements made by those interviewed was conducted to compare their perspectives of the needs of IB/M students, the needs of in-service teachers, and the skills they think are important for preparing future teachers to effectively integrate technology into the classroom.

Site Selection

Permission was granted by the EPSY 356 instructor via email communication and personal visits to conduct the data collection in the Educational Psychology Department and EDCI Department at the University of Connecticut.

Sample Selection

The nature of naturalistic inquiry or ethnographic research determined the type of sampling employed in this study. The EPSY 356 instructor and the former head of the department of EPSY recommended the potential sample. Purposive sampling was used to select subjects who could contribute to the generation of theory and to the expansion of the developing theory (Bogdan & Biklen, 1992; Lincoln & Guba, 1985). Maximum variation sampling, a type of purposive sampling, was used in this study to enable the researcher to document and include those "unique variations" or cases which deviate from the norm (Patton, 1980, as cited in Leppien, 1995) and increase the scope or range of the data collected (Lincoln & Guba, 1985). According to Lincoln and Guba (1985), maximum variation is best achieved by selecting each unit of the sample only after the previous unit has been tapped. The purpose for this sampling procedure is to "generate the information upon which the emergent design and grounded theory can be based" (p.201). The selected subjects for this study were 17 EDCI faculty members, EPSY administrative personnel, and Neag School of Education administrative personnel, as well as the Teaching Assistants who taught EPSY 240 in the fall of 2001.

Materials and Data Collection

Data collection for this study utilized two important sources: (1) interviews which documented perceptions regarding the content covered and instructional methods used in EPSY 240 and (2) documents which provided a rich description of the phenomenon under investigation (Spradley, 1970). The use of ethnographic interviews was used to obtain the subject's perceptions regarding the reasons for relevant content. In-depth interviews were conducted with identified samples.

A single standardized interview protocol was developed by the researchers and validated by inspection of the course instructor and several other senior researchers (the Appendix contains the complete questionnaire). The interviews were designed to collect descriptive data in the "subjects' own words" that pertained to the research questions under investigation and to "develop insights' on how subjects interpret some piece of the world" (Bogdan & Biklen, 1992). At the beginning of the interview, demographic questions were asked to obtain a general understanding of how the subjects perceive their teaching experience and technology and to encourage the subjects to express themselves freely about a topic of interest that may make them more comfortable with the interview process.

After the investigative work had been conducted, semi-structured interviews consisted of open-ended questions designed to obtain a more complete understanding of the views of the participants themselves, providing a clear understanding for the reasons underlying relevant content and instructional methods in EPSY 240. Similar grand-tour questions were followed by specific follow-up questions seeking to understand the subjects' perceptions about their "tacit knowledge" from what transpired during the interview process (Spradley, 1979, pp. 8-9). With the use of semi-structured interviews, comparable data across subjects was accomplished.

Two other sources of documents were used to generalize and find out the needs of students' perspectives regarding the process, the content, and the assessment of EPSY 240. These sources included (1) the end-of-instruction evaluation of qualitative data collected by the instructor who taught EPSY 240 in fall, 2001 and (2) the pre- and post- survey data for EPSY 240 from fall of 1999, 2000 and 2001, collected by the instructor. However, it was not possible to perform more than a cursory inspection of the pre- and post-test survey data due to it not being delivered until quite late in the project.

Data Analysis Methods

Collection of data consisted of interviews made with participants that were transcribed following each interview. Due to time and tool factors, some interviews were not recorded, but the researcher took context rich and detailed notes. In addition, due to the same reason, some of the taped interviews were not transcribed. Similarly, the researcher listened to the tape and summarized the interview. The collected data were analyzed following systematic procedures, outlined by Strauss and Corbin (1990) to generate a "rich, tightly woven, explanatory theory" (p.57) and to develop an "inductively derived grounded theory" (p.24) about the phenomenon of relevant content of EPSY240. As suggested by these researchers, the data analysis coincided with data collection and affected the collection of additional data. The analysis procedures employed three hierarchical, yet interrelated, and recurring types of coding: (1) open coding; (2) axial coding; and (3) selective coding.

Open coding was used by the researchers to compare and contrast discrete parts of the data and to formulate conceptual labels. These concepts were then compared for similarities and grouped together under a higher order, more abstract concept called category (p. 61-74).

Next, axial coding was used to help identify and link subcategories to a category by a set of relationships. These relationships include causal conditions; intervening conditions; interact ional strategies by which it is handled, managed, or carried out and the consequences of those strategies; and the context in which it is imbedded (pp.96-107). Fulfilling the necessary criteria for generating relationships and common themes (pp. 111-112), the derived concepts and relationships were repeatedly verified in the data we analyzed.

In the final stages of coding, selective coding procedures guided the selection of a core category to relate all major categories to each other and the core category. This integration helped the design team to form a grounded theory from which descriptive narrative about the central phenomenon of the study was articulated (pp. 116-129).

Results

This section discusses the results from analyzing the data gathered from student course evaluations and faculty, staff, and student interviews.

Themes from EPSY 240 Student Comments

There were over 100 evaluations (of a total of enrollment of approximately 120 students). Approximately 75% of the evaluations had comments written on them. Each comment was assigned to one or more themes as seemed appropriate, with new themes being developed as comments did not readily fit within existing themes. Some comments were assigned to multiple themes.

The themes that were developed are listed below. The data supporting the development of each theme is listed in the Appendix.

Themes

1. Course Organization: Clear organization and clear communication of that organization to students

2. Assessment: Expectations for assessment in Ed Tech 240 should be made clear and match instruction

3. Pragmatic: Learning objectives and tasks for Ed Tech 240 should be practical and focused.

4. Level 1 Competency Support: Support for preparation of and practicing skills for the Level 1 competency exam.

5. Technology Exposure: Be exposed to a wide variety of technologies suitable for classroom-related work.

6. Miscellaneous – see appendix for details.

Discussion

The student's focus is pretty clearly focused on the pragmatics of getting through the course, such as with a clear course organization and understanding upon what and how they will be assessed. There is also a strong concern about getting support for the Level 1 competency exam, an assessment required for teacher certification and which assesses the Level 1 teacher technology skills (basic computer use such as word processing, email use, and other productivity tools).

Themes from Faculty and Staff Interviews

The section contains the themes obtained from examining the interview notes and transcripts of interviews with faculty, administrative officers, and course teaching assistants (who actually taught the lab sections) of the School of Education. All but one of the graduate students interviewed had taught lab sections of the course (the one being someone considered knowledgeable in the content domain). The data supporting the development of each theme is listed in the Appendix.

Each interviewee was either recommended by the EPSY 240 instructor or was believed to likely have germane experience, thoughts, and opinions regarding the technology education needs of pre-service teacher education. The table below shows the grouping association of the interviewees.

Table – Interviewee job function

Ed Psych faculty	3
EDCI faculty	5
School administrative officers	4
Teaching and grad assistants	5

A balance was sought across the categories so that repeated themes would not have undue weight from being over represented by a larger number of individuals from a given category. The graduate assistants were all former teaching assistants of the EPSY 240 course, except one, who had strong instructional experiences in educational technology.

The same set of questions was utilized in all but two cases (the two cases being very constrained because of time limitations and so a cursory version of the questions was used). See the Appendix for a copy of the interview instrument.

The data was analyzed as described in the Methods section to identify themes that recurred across the interviews. The themes are listed below without regard to any particular priority, as there was no methodology developed to assess a prioritization.

1. Support for preparation of and practicing skills for the Level 1 competency exam & related personal productivity software.

2. Be exposed to a wide variety of technologies suitable for classroom-related work.

3. Use of Internet and Internet technologies

4. Use of technology to support pedagogy

5. Personal and professional use of technology

6. Difficulties with technology use in schools

7. Professional technology standards (i.e., ISTE, NCATE, and CT Teacher Standards)

8. Miscellaneous – see appendix for details.

Discussion

Most of the interviewees were drawn from faculty, and not surprisingly, these interviewees expressed concerns with much bigger and less focused issues than the students. There was certainly recognition (not apparent in the themes above), that a one-unit course certainly cannot address or even begin to address the above issues. However, the above issues do speak to concerns that students at least be exposed to a wide range of technologies, especially Internet related ones, and that the exposure be highly oriented to the service of supporting pedagogy.

It is interesting to note that they also have expressed some support for the need to support students with Level 1 competency skills. However, they virtually all disavowed that they or the EPSY 240 course should be explicitly responsible for teaching such skills, unless perhaps such teaching occurred entirely incidentally to other instruction which depended upon the skill, and if the instructor involved chose to spend course effort on teaching some aspects of the Level 1 skills.

Course Design

Summary of Course Design

Educational Technology 240 aims to help IB/M students with no prerequisite technical skills to improve their skills in using the computer as a productivity tool (as ultimately measured by Level 1 Technology Assessment) and to obtain awareness of a broad range of educational technologies and their potential for integration into the K-12 classroom.

Our proposed course design includes the following components:

1. In the fall semester, over the course of ___ weeks, as students enter into the IBM education program, they will meet face to face with classmates to complete this one credit course entitled Technology in Education. The sessions begin with one **whole group lecture** led by the Professor Michael Young, who introduces students to the course and summarizes course expectations. For the remaining classes, students are divided into small groups of 10-12 and attend a series of ___ **small group hands-on lab sessions** led by either Dr. Young or a graduate level Teaching Assistant.

2. The **EPSY 240 Student Guidebook** is intended to be an organized reference for students enrolled in the course. It is divided into sections for each of the areas covered in the syllabus and organized in the order that topics are introduced to students. The guidebook contains information about the syllabus, learning objectives, grading requirements, assigned learning tasks, and reflective prompts. Additional handouts and open-ended activity sheets are interspersed throughout this guidebook (e.g. glossary, technology standards, articles, website summaries) to support

exploration with educational technologies outside of the course requirements and after students have completed EPSY 240.

3. The **EPSY 240 Companion Website** complements the printed version of the EPSY 240 Student Guidebook. It is designed to provide support in various lab sessions, links to related resources for extended learning opportunities and information for students to use to complete class assignments before, during and/or after each face-to-face meeting.

4. **Teaching assistants** selected for this course are expected to meet as a group with Dr. Young every other week before Dr. Young's small group lab session. These meetings are intended to foster a community of learners among assistants and provide a forum for exchanging classroom management ideas, sharing content expertise, and reflecting on how well students (and teachers) are keeping up with each session's learning objectives. The suggested lesson plans for each session are purposely kept flexible and often open-ended to allow for change in these objectives and/or learning tasks as the course progresses.

5. The **EPSY 240 Teacher's Assistant Guidebook** is intended to facilitate communication and shared meaning of learning tasks among teaching assistants. An overview of the course with specific tips and strategies contributed from past teaching assistants is provided as well as supportive lesson plans, discussion prompts and electronic lesson templates organized in sequence by which they are presented in the syllabus. It is hoped that returning teachers and new assistants will add to this guidebook in future years with offerings aligned to their own areas of expertise. This

will promote multiple ways of understanding about teaching and learning with technology in the classroom.

Course Design Reflects Theoretical Frameworks

As outlined in the beginning of this paper, our course design is grounded in a combination of theoretical constructs including constructivism, instructional scaffolding within a learner's zone of proximal development, and case-based reasoning. Likewise, our instructional lessons are loosely guided by Gagne's Nine Events of Instruction. In this section, we will briefly summarize some specific ways our course proposal reflects these theories.

Constructivism

Our proposal for ESPY 240 supports the constructivist assumptions by providing many opportunities for students to actively engage in hands-on explorations with a variety of software tools and online formats. At points within each lesson, students are encouraged to assume roles as different types of students and/or teachers and asked to reflect on ways to appropriately integrate technology into these varied contexts. Discussion about issues and tools is encouraged with the outcome of ensuring that each student can defend whichever position they take in ways that support good teaching practices.

In attempts to "situate cognitive experiences about authentic activities" (Duffy & Jonassen, 1992, p. 4), most syllabus topics are paired with short case-based scenarios that reflect authentic learning and teaching tasks proposed by real teachers, and several are posed by faculty teaching some of the methods courses in which EPSY 240 students will later enroll. Like Tam (2000), we believe that "a learner's 'puzzlement' [can be]… the stimulus and organizer for learning" (p. 3). Likewise, we've proposed an online discussion list, access to professional

listservs, and discussion times during each session to encourage students to exchange their perspectives and construct new understandings about educational technologies from multiple perspectives through this sharing process.

Our proposed course addresses the importance of self-directed learning in several ways. One important change is the timeline and passing requirements that students are given to take and pass the Level 1 Technology Exam. Since this area was one of great concern as reflected in the student evaluations, our design team felt strongly about encouraging students to take more control in this aspect of their learning and our proposal recommends specific strategies to provide for this. Similarly, although each session is designed to focus learning with some guiding questions on a particular syllabus topic, the lesson outline reminds lab instructors to encourage students to ask more specific questions that address their particular learning needs and areas of concern.

Instructional Scaffolding within a Learner's Zone of Proximal Development

According to Schunk (2000), the five functions of Vygotsky's concept of instructional scaffolding are to "provide support, function as a tool, extend the range of the learner, permit the attainment of tasks not otherwise possible and use selectively only as needed" (p. 245). Our proposed course includes several components designed to address each of these functions. We have created a mock companion website which includes a course syllabus with hypertext links to individual sessions, a list of course objectives linked also to each particular syllabus topic, explanations of criteria for assessment, links to related online resources and efficient ways for students to communicate with their classmates and/or instructor. Each syllabus topic would be explained in detail within the links for each individual lab session. Within each lesson, learning objectives are clearly outlined, students are guided through the process of exploring new areas of

knowledge in an electronic medium and there are many links to optional extended learning resources to explore selectively if they desire.

Similarly, a student guidebook has been proposed as a print resource for students more comfortable with print or desiring additional handouts and directions about each topic on the syllabus. The guidebook would follow the same structure of the companion, but offer a different medium with additional resources to serve as an instructional model of support for learners in both print and electronic environments.

In addition, to reinforce the social nature of learning, we have set up links to examples of other teachers and students using technology to construct teaching tools and reflective products in the context of that session's topic. During the face-to-face sessions, teaching assistants would be provided with model templates of software tools designed to demonstrate the range of instructional products and tools offered to challenge students to move beyond their current level of understanding. Students could also have access to these templates during the hands-on portion of each session or to practice with and explore on their own outside of class.

Case-Based Reasoning

As mentioned earlier, short case-based scenarios of teachers and/or students faced with a particular teaching or learning problem are paired with each syllabus topic. Students are encouraged to read and reflect on these scenarios at the start of each session as a means of putting the lesson objectives into some meaningful context. Similarly, these case based scenarios can serve as models for what to expect on the midterm examination so that students are familiarized with the expectation of applying their learning to more contextually based learning situations instead of just recalling isolated facts.

Secondly, the proposed online companion to the course includes several links to examples and authentic experiences applying each session's topic resembling the "gallery walks" and "pin-ups" described by Kolodner & Guzdial (in Jonassen & Land, 2000) in their discussion of "classroom rituals that promote learning" (p. 234). Granted, the EPSY 240 students did not initially create any of these examples, but they are models of what other students and teachers have created, (and often include comments written by the original designers that provide a glimpse into their own perspectives of teaching and learning) and can serve as helpful experiences for exploring if so desired.

Finally, our instructional design team has proposed the possibility of creating an online space for a "web-based showcase of student work" in which student-created tasks completed during the EPSY 240 experience can be uploaded to build a useful case library that can be added to each year for students in the years to come. In this way, students can learn from other students and future students can reflect on the differences demonstrated in the projects as technology and learning contexts change in the future.

Gagne's Nine Events of Instruction

The nine events of instruction were loosely incorporated into the description of each prototype lesson (see Appendix), which could eventually be used as a type of guiding lesson plan for teaching assistants. In each lesson, you'll notice the inclusion of session components including informing learners of the objectives; assessing prior knowledge; stimulating recall; presenting the material while providing learning guidance; opportunities to explore and elicit performance; methods for assessment; and tasks to enhance retention and transfer to the exam and beyond. In keeping with constructivist interpretations of these nine events, however, the

amount of structure provided and the progression through these events may vary depending on what skills and personal needs the particular learners in that group bring to the experience.

Course Design Reflects Needs of Students and Faculty

As discussed in the Results section of the need analysis above, certain themes were found and this section addresses how our design is intended to meet those needs in the areas of:

- **Course objectives**

  Clear communication of organization and expectations; want support for preparation and practice of Level 1 competency tasks; be exposed to a wide variety of technologies, learn more about Internet technologies, be exposed to problems and issues with using technologies in school.

- **Learning tasks** (lab work, homework, projects, exams)

  Use of technology to support pedagogy, personal and professional use of technology, prepare for flexibility with technology, formal experience with lesson plans, should be practical and focused)

- **Learning supports** (website, student handbook, discussion board)

- **Assessment** (emphasis as reflected in %, extra credit, encourage reflection and self-directed learning)

- **TA induction process** (meet every other week with instructor before lab session to share/reflect/exchange/plan specific directions of their upcoming sessions; provide TA manual with some tips and suggestions)

Instructional Objectives

Based upon the needs analysis, the following instructional objectives were decided upon. These are expressed as instructional, rather than behavioral, objectives because we felt it fit within our constructivist philosophy to identify the overall goals of the course, but still leave flexibility for each TA to handle their own lab section as best as they saw fit, and depending upon the specifics of the given section.

INSTRUCTIONAL ISSUES			
I-1	**Assistive Provisions**: Describe how teachers can use computers to provide alternative provisions for all students.		II, III, IV, VI
I-2	Identify the **barriers** that prevent instructional technology from being implemented into the curriculum.		II, III, VI
I-3	Demonstrate an awareness of **instructional issues** related to integrating technology into the classroom.		II, III
I-4	Summarize the **ethical issues** connected to copyright, fair use, and online access for children.		VI
TECHNOLOGY TOOLS			
T-	Practice using **basic features of computer operating systems** within both the Macintosh and Windows environments.		I, V
T-	Demonstrate an ability to use **basic features of productivity tool**s in Microsoft Office Suite.		I, III, V
T-	Demonstrate an awareness of various **multimedia tools** and features.		I, III, V
T-	Explore a variety of **content-specific tools** available to support learning in a Treasure Hunt environment.		I, II, III
T-	Describe how teachers can **use the Internet** to enhance instruction and/or provide learning supports for students.		II, III, IV, V
T-	Describe how teachers can be prepared to **troubleshoot** and solve routine hardware, software, peripheral and networking issues.		I, II, V
PROFESSIONALISM			
P-	Practice **personal responsibility and initiative** by attending class, completing assignments by their due dates, committing to self-reflection about Level 1 technology needs.		V
P-	**Contribute** to classmates and to profession by sharing projects, experiences, and discoveries.		II, V

P-	**Collaborate** with classmates in constructing activities using technology.		II, V
P-	Discuss the importance of teachers exhibiting a **positive and flexible attitude** toward technology uses.		V, VI

Course Schedule

Date & Location	Topic and Assignments
Week 1 - Lecture	Welcome, Course Overview & State-of-the-art in educational technology, Level I Assessment. Competencies WebQuest
Week 2 - Lab	Walkabout UCEML, Accessing the online syllabus Listservs (send e-message to SOEF01-L), etc. Pre-survey. Digital photo of self. Homework: Use the digital camera to take each other's photos during class. Your TA will post your photo on WebCT. Download the photo and email it as an attachment to your TA and CC the instructor.
Week 3 - Lab	Terminology & concepts, Tech Jeopardy, Fair Use, Copyright Reading: Terminology Respond to the true/false terminology list by editing it in MS Word and submit as an email attachment. You will get your document back with comments and corrections from your TA; you need to extract the comments into a separate document, make corrections to as indicated, and email your corrections and the TA's original comments back to your TA in a separate MS Word attachment.
Week 4 - Lab	Basic technology lesson plans & PowerPoint introduction. Homework: Write a very simple lesson plan in PowerPoint on a trivial subject that you know how to teach, and submit it as an email attachment.
Week 5 - Lab	Technology Treasure Hunt: Part I Homework: Post your response to one of the reflection questions from the treasure hunt on WebCT.
Week 6 - Lab	Technology Treasure Hunt: Part II Homework: Write a simple lesson plan (not more than a page) in MS Word on teaching one of the technologies you explored during the treasure hunt and post it on WebCT.
Week 7 - Lab	Networking and Internet technologies and architecture Homework: Using PowerPoint, draw a diagram of the Internet topology showing the relationships of personal computers to

	intranets to servers; save it in HTML, and post it on the lab section web site.
Week 8 - Lab	Midterm
Week 9 - Lab	Evaluating Websites and Teaching & Learning with Databases Homework: Post your evaluations of designated web sites on the lab section's on-line database.
Week 10 - Lab	Advanced Word processing for desktop publishing and language arts: technology use in middle schools Homework: Using MS Word, post a brief outline (using MS Word's outline capabilities) laying out the basic organization of your lesson plan project.
Week 11 - Lab	Lesson plan working session. Exit Survey
Week 12 - Lab	Lesson Plan Project presentations in lab sections
Week 13 - Lecture	Presentations of technology of the Lesson Plan projects by TAs

Grading Policies and Criteria

Your grade in this course will be based on the following criteria:

Class Participation (40%)

- Hands-on Tasks in Lab Sessions (20%)
- Homework Tasks and Reflections (20%)

Midterm Exam (25%) Multiple choice, short answer

Lesson Plan Project (25%)

- Choice of Format (have proposal accepted by instructor)
  - Publish a lesson plan as a web page (.html file)
  - Create a webquest (with integrated lesson plan components) as a web page (.html file)
  - Videotape a lesson using some sort of meaningful technology (with lesson plan components included)
  - Create a PowerPoint Presentation that highlights lesson plan components or teaches part of your lesson
- Each group needs to hand in a hard copy of something that includes an

explanation of all lesson plan components.

- Each group will also be responsible for presenting your lesson idea to your classmates using some type of visual medium other than the written lesson plan. Every group needs to present, but you may select from various media (e.g. PowerPoint, web page, video) for sharing your lesson.
- A portion of points for this project will be from peer assessments guided by a rubric (3%)
- A portion of points will be received at certain times during the course to help you on keep to a timeline (3%)

Level 1 Exam (10%)

- Everyone is required to take the Level 1 Exam by the end of October.
- Those who pass all parts of the exam the first time automatically earn the 10%.
- Those who fail any part of the exam earn the 10% after turning in to the instructor a detailed outline of technology skills you need to improve upon and your plan to address those needs in order to pass the Level 1 Exam. You will have the option to retake the test before the course ends, but you will definitely need to pass the exam before you graduate from the IB/M Program.

Optional Extra Credit (3 points)

- Teach an optional session to a classmate that did not pass Level 1 Exam.
- Extend lesson plan project into a larger unit or detailed web quest.

Developed Materials

This section describes the materials developed from the design.

Final Lesson Plan Project

The final lesson plan project is a synthesizing experience that gives students a chance to implement an actual designed learning experience using technology. The current course

assignment was kept substantially intact. However, we reorganized the description and added an explicit assessment rubric to help students better understand what was expected of them, and to promote greater assessment consistency across the various course lab sections.

EPSY 240 Lesson Plan / Lesson Plan Presentation Rubrics (for TAs)

Teacher: _____ Section: _____ Group Members: _____

ACTIVITY		Exemplary*	Proficient	Basic	Incomplete**	Possible Points***
Presentation to class using the chosen format: a. PowerPoint b. WebPage c. WebQuest Lesson d. Video and overview of supporting materials.		**16 points** All members of the group participate in a presentation that is clear, with good mechanics (time, spelling, etc) that are accurate, and the delivery of content is achieved.	**14 points**	**12 points**	**10 points**	15%
Use of technology supports the learning goals of the lesson, appropriateness, enhances learning and participation,		**33 points** The technology use is appropriate and it enhances student learning, it supports the use of authentic data, promotes collaboration, and its use stimulates social interactions inside or outside of the classroom.	**27 points**	**24 points**	**21 point**	30%
Learning Theory		**6 points** An appropriate learning theory is cited that forms the basis for the lesson plan development.	**4 points**	**3 point**	**2 points**	05%
Lesson Plan Contains key components of a good lesson plan, and delivery of printed supporting materials.		**55 points** Provides sufficient detail for delivery of the lesson: including content and technology objectives; materials needed; examples of students work; access to student or learner resources; assistive modifications or adaptations; pre-assessments; student evaluations or assessments	**45 points**	**40 points**	**35 points**	50%
TOTAL POINTS						100%

* More than 100 pts are possible, but total will max out at 100.
** No evidence for a given category can be expected to be scored as zero.
*Expect points to be deducted for incomplete and missing portions or minor issues. Grading: A:90-100; B: 80-89; C:70-79;, etc.

EPSY 240 Lesson Plan Requirement (for students)

Write up the lesson plan with information concerning:

Sequence	Content	Check when included
1. Theoretical framework for working with students:	Learning theory such as Behaviorism, Constructivism, Schema theory, Gardener's Multiple Intelligences, Sternberg Triachic model, Bandura's Social Learning Theory, Lave's Situated Learning	
2. Materials/Media:	Required hardware and software (including initial and recurring costs); other materials	
3.Audience/Grade Level:		
4. Pre-requisites:	cognitive & physical.	
5. Objectives:	Give lesson objectives or description of purpose of the lesson	
6. Activities:	Describe the activity(ies) students will do, the time frame, and the products they will produce (with examples where possible).	
7. Assessment:	Assessment suggestions and criteria	
8. Online and paper references:	web page of URL links suggested: a) teacher links b) student/ learner links	
9. Issues	List of issues assistive technology for your proposed lesson	

Modules

The following modules were developed as preliminary samples for the course.

Module 1 – Critically Evaluating Websites for Learning and Organizing and Analyzing Information with Databases

Session Objectives: After this learning module, you should be able to:

- use an Internet browser to access websites marked by your instructor

- critically evaluate three websites using a common criterion based rating rubric and defend your ratings in discussions with classmates
- use a simple online form within a database to enter rating information into the appropriate database fields and post online for others to view
- enter data accurately into preset fields of a database and sort by a particular field
- reflect on the importance of being able to critically evaluate websites and pull out helpful teaching resources available within a particular website
- give specific examples that describe learning with databases as well as teaching with databases

Completing these tasks contributes to your continued growth in the following areas:

- **ESPY Course Objectives**
- **Connecticut Technology Competencies for Level 1 Exam**
- **National Technology Standards**

REQUIRED TASK:

Before attending this lab session, please use the evaluation rubric below to rate each of the following three websites in regards to quality websites for use in the classroom. Keep in mind the particular age group and/or content you are expecting to teach. For each component in the rubric, make some brief notes to support your rating. Enter your comments into the online database form and be prepared to share and compare your opinions with others during next session.

Evaluation Rubric

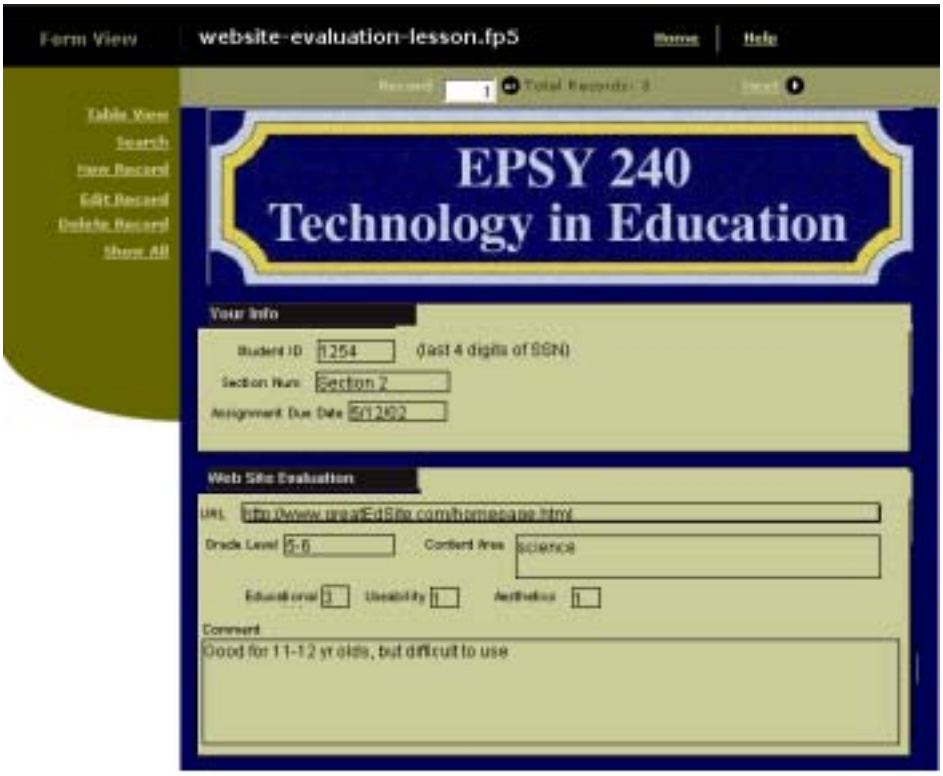
Link to and print out the website evaluation rubric made available from Pacific Bell's Blue Web'n. You can read more about the details in each rubric category in the outline provided by the Oregon Public Education Network. (You will also find a checklist for this rubric in your Student Guidebook). Use these categories to guide your rating of the websites below.

Websites to evaluate

1. Blue Willow Literature Cyberguide for Grade 4 Students
2. Rader's Biology4Kids
3. Bonus.com

Online database for submitting ratings

Enter your webpage ratings into this online form by clicking in each cell and typing your answer. Click the submit button to electronically submit your opinions. You will access the compiled data during your lab session next week and use it as a prompt for discussion about quality websites for learning. You will also spend some time-sharing ideas about how databases can be used as a tool for teaching and learning. (see some examples in the related resources below).



Follow-up Reflection:
Send an email message to your teaching assistant responding to one of the following:

1. What would you identify as the one most important criteria for a quality website when looking critically at its learning value and why?

2. How do you think anonymous student responses displayed in a database, as you used in class, fosters or inhibits discussion in a classroom of middle school students?

EXTENDED LEARNING OPPORTUNITIES

You are not required to visit any of the resources listed in the following section as part of this course. These links are available to enrich your own use of technology in this course and as you move through the IBM program and out into your field experiences.

Critically Evaluating Websites for Learning	**Teaching and Learning with Databases**
• ABC's of Website Evaluation is an excellent resource also included in your student guidebook • Teacher's Guide for Teaching Internet Literacy from Yahooligans is designed as a complete unit with links to interactive activities to guide your students through evaluating websites	• Using Databases with Upper Elementary Students from Prince William County, Virginia addresses how to effectively teach students about databases and gives a good lesson example of how fourth graders are using a database to learn more about the solar system. • Promoting Scientific Thinking with Databases from MAPE in Scotland provides links to

with a critical eye. • Pacific Bell Blue Web'n Site Evaluation Rubric is also described in more detail here • Ed's Oasis Evaluation Center includes online worksheets to help teachers and students evaluate a website or score a lesson plan • Web Evaluation Tools from Classroom Connect's Library Hot Five links to five websites that contain web evaluation tools you can use yourself or with students that you work with • Kathy Shrock's Critical Evaluation Page will help answer all your questions and link you to many examples of web evaluation formats	information about several different types of uses of database programs with elementary students and science. • Introduction to Databases outlines a unit lesson plan used in the United Kingdom. • Database Tutorial from GeekGirls.com walks you through the general steps of creating a database and using it to manipulate and analyze information • Chapter on Databases from Merrill Education's Link to Technology companion website • Database Tools and Tutorials from 2Learn in Canada is a comprehensive tutorial of the most popular database programs including Appleworks, ClarisWorks, Filemaker Pro, and Microsoft Access. • Nutrition on the Web is an example of an online database created for students to use to analyze and interpret data in a real-world application.

Module2: Searching the Internet for Lesson Plans and Educational Websites

Session Objectives: After this learning module, you should be able to:

- identify and differentiate between Internet search engines appropriate for young children as compared to those appropriate for older students and adults
- generate an appropriate search string (using the format suggested in class) for use in an adult search engine to locate lesson plans and age appropriate, educational websites on a specific topic
- locate lesson plans and age appropriate educational websites using a search engine designed for children
- copy and paste a hyperlinked URL from a browser's address window and the text of the online lesson plan into a Microsoft Word document and email this document as an attachment to a classmate
- receive, open and print out an attached Microsoft Word document

Completing these tasks contributes to your continued growth in the following areas:

- **ESPY Course Objectives**
- **Connecticut Technology Competencies for Level 1 Exam**
- **National Technology Standards**

SETTING THE SCENE

SCENARIO #1:

Your teaching colleague down the hall has been given permission to attend a two-day professional development workshop outside of your school next week. Your school's policy states that substitutes should be given detailed lesson plans for each of the subjects they will be teaching. She's got plans set up for reading, math and science, but Social Studies is a bit of problem, since she is just finishing a unit on the Civil War and doesn't want to have the substitute introduce the next topic. She is hoping to get her hands on a few good activity ideas that the substitute could use to reinforce what her students have already learned about the Civil War. She has heard from other teachers in your grade level that there are some incredible lesson plan resources on the Internet, but she is not sure where to begin looking. She knocks on your door at the end of the school day and wonders if you can provide any help. What are some of the best online websites that have good lesson plans related to your school's curriculum? Would you recommend she use a search engine designed for kids or one more appropriate for adults? Is there a particular search engine that is best for this type of topic? Do you have any tips about how to quickly find lesson plans for fifth graders about the Civil War?

REQUIRED TASK:

During this lab session, you will have an opportunity to practice searching for lesson plans and educational websites using a specific search strategy to save you time in locating the most age-appropriate materials. You will explore search engines designed for adults as well as those designed to protect children from inappropriate content and pictures. Finally, you will be asked to copy information from a website with a good lesson plan into Microsoft Word and email it as an attachment for later access**.**

After class, for homework, you will be asked to repeat this process to locate an additional lesson plan related to your topic and email it to a classmate as an attachment. You will print out the lesson you receive from someone else and bring it back to class the following week.

Beginning Strategies for Locating Educational Resources

- Indicate the subject area or specific topic.
- Use quotations to group two or more words together as a phrase.
- Indicate Internet project, lesson plans, webquest, quiz, or class project using quotations as needed.
- If level not appropriate, include the grade level or grade range in quotes (spell it out e.g. "third grade")
- Connect all items, including the first, with a plus sign and no spaces. If the search is too narrow, remove plus signs.
- Look for keywords in annotations of links located from a similar search.
- Follow links on one web site to locate other related links.

SEE THE EXAMPLE BELOW...

Example:
For information and activities about **whales**:
Instead of whales, try...

+"lesson plans"+whales
+"second grade"+whales+
+whales+quiz

+whales+webquest
+whales+cyberhunt
+whales-"pilot whale" (to not get pilot whale sites)
+whales+"clip art" (or click Images button)
+whales+images (or click Images button)

Search Engines for Adults (Teachers)

- Google is an impressive search engine that locates relevant links quickly with very little clutter on its page. It features an automated method that ranks web pages according to their popularity and number of times they are linked to other similar pages. Its "I'm feeling lucky" button runs your search and then takes you straight to the web page of the number one hit. http://www.google.com

- Dogpile is a type of meta-search engine searches 15 popular search engines (e.g. Alta Vista, Yahoo) all at the same time and reports results with the top 10 from each search engine. You can continue using just one search engine or can customize your search to include only some search engines or customize the order the results are reported to you. http://www.dogpile.com

- See also the Educational Databases with Search Engines below to try a different search route.

Search Engines for Children (Students)

Try out the strategies we just used with the "adult" search engines to see the different results you will find with these kid-friendly search tools.

1. Yahooligans: The information at this site is indexed by general categories. You can follow the categories to information that is more specific or you can just do an open-ended search through all the categories at that site. http://www.yahooligans.com

2. Ask Jeeves for Kids: This search engine encourages children to ask questions in "plain English" and then helps learners fine-tune their questions with a series of pull down menus and questions that are more specific. There is also an adult version of this site called Ask Jeeves. http://www.ajkids.com

3. Kids Click: This web search for kids was designed by librarians and search results are reported back in reading levels! It also includes nine Internet searching lessons that teachers and parents can do with learners. http://sunsite.berkeley.edu/KidsClick!/

EXTENDED LEARNING OPPORTUNITIES

You are not required to visit any of the resources listed in the following section as part of this course. These links are available to enrich your own use of technology in this course and as you move through the IBM program and out into your field experiences.

Educational Databases with Searching Functions	**Other Search Engines for Teachers**
• ProTeacher allows you to search their entire collection of educational lessons • MarcoPolo Search Engine	• FindArticles Search through an archive of published articles dating back to 1988 from more than 300 magazines and journals. This is great for locating research articles about educational topics. • Microsoft Design Gallery Live: Search and download

provides access to all of the educational resources created by the MarcoPolo partners plus partner reviewed materials. • Teachers Homepage from Scholastic.com includes grade level lesson plans, online activities and much more to search through. • Gateway to Educational Materials provides searchable one-stop access to high quality lesson plans, curriculum units and other education resources on the Internet!	clip art and import directly into your Microsoft clip art gallery on your computer. Use in your word processing documents, slide shows and on web pages. Good search terms for school related clip art are reading, books, teacher, and student.

Module3: Teaching and Learning with Multimedia and PowerPoint

Session Objectives: After this learning module, you should be able to:

- build a four slide show in PowerPoint that integrates text, graphics, and sound
- download clip art and sound files and import into a slide show
- explain how PowerPoint presentations can be used to enhance teaching and learning
- describe the range of educational multimedia resources available on the Internet

Completing these tasks contributes to your continued growth in the following areas:

- **ESPY Course Objectives**
- **Connecticut Technology Competencies for Level 1 Exam**
- **National Technology Standards**

SETTING THE SCENE

SCENARIO:

You are beginning a unit with your fifth grade students about Life in the Rainforest and you realize that they have little or no background knowledge about what a rainforest looks like or what type of plants and animals live in a rainforest. You read a great picture book to them yesterday, but you are looking for a little extra something to spice up your discussion on rainforest animals later in the week. You have seen teachers use PowerPoint to present information in a workshop setting and wonder if there's anything valuable enough online about the rainforest that would be worth putting into a slide show to share with your students. What types of multimedia resources might enhance your discussion of this topic? How might you access these types of resources? How would you begin the process of getting multimedia resources from an Internet webpage into a PowerPoint slide show?

REQUIRED TASK:

During this lab session, you will have an opportunity to explore multimedia resources online and learn how to import these resources into a PowerPoint slide show to foster more interesting student discussions about a certain topic or to help build the background experiences of students. Your lab instructor will provide an overview of the types of multimedia resources available on the Internet within the context of a prepared PowerPoint slide show. Your job will then be to select one of the following content areas and create a slide show (or adapt an electronic template) that makes use of some of the multimedia resources found below that topic. Towards the end of the session, you will be given the opportunity to share or "present" your topic to the rest of the class.

Topical Multimedia Resources to include in PowerPoint Slide Shows

- **Science: Life in the Rainforest**
  - Great clip art, diagrams and appropriate text from Enchanted Learning
  - Many sound clips of the rainforest to download from Kid Explorers
  - Rainforest video clips to download from Kid Explorers
- **Social Studies: American Memories**
  - Today in History: photos, primary documents and background information
  - See, Hear, and Sing America's Story from The Library of Congress
- **Math: Problem/Image of the Week**
  - Source for Problems at many grade levels and topics from Math Forum
  - Graphics and animations for first year calculus
  - QuickTime movies and views of spirographs and knots
  - Math Graphics and Visualizations Index from Math Forum
- **Literature: Diary of Ann Frank**
  - Photographs and Background Information about Ann Frank
  - Audio of a speech from Adolph Hitler in 1938 from the History Channel
  - Short stories and photos of Holocaust Rescuer & Survivors from Scholastic.com
- **Open House or Field Trip (use the digital camera to**
  - Example of Back To School Night Slide Show
  - Example of Slide Show created by Kindergartners in Norwich, CT

EXTENDED LEARNING OPPORTUNITIES

You are not required to visit any of the resources listed in the following section as part of this course. These links are available to enrich your own use of technology in this course and as you move through the IBM program and out into your field experiences.

PowerPoint Tutorials and Online Guides	**PowerPoint Shows by Teachers and Students**
• ActDen's PowerPoint in the Classroom • Clip Art for PowerPoint from Microsoft's Design Gallery Live • PowerPoint Tasks from Internet4Classrooms	•

Course Assessment Criteria

The following describes the over-all course assessment criteria.

Your grade in this course will be based on the following criteria:

Class Participation (40%)

- Hands-on Tasks in Lab Sessions (20%)
- Homework Tasks and Reflections (20%)

Midterm Exam (25%) Multiple choice, short answer

Lesson Plan Project (25%)

- Choice of Format (have proposal accepted by instructor)
  - Publish a lesson plan as a web page (.html file)
  - Create a webquest (with integrated lesson plan components) as a web page (.html file)
  - Videotape a lesson using some sort of meaningful technology (with lesson plan components included)
  - Create a PowerPoint Presentation that highlights lesson plan components or teaches part of your lesson
- Each group needs to hand in a hard copy of something that includes an explanation of all lesson plan components.
- Each group will also be responsible for presenting your lesson idea to your classmates using some type of visual medium other than the written lesson plan. Every group needs to present, but you may select from various media (e.g. PowerPoint, web page, video) for sharing your lesson.
- A portion of points for this project will be from peer assessments guided by a rubric (3%)
- A portion of points will be received at certain times during the course to help you on keep to a timeline (3%)

Level 1 Exam (10%)

- Everyone is required to take the Level 1 Exam by the end of October.
- Those who pass all parts of the exam the first time automatically earn the 10%.
- Those who fail any part of the exam earn the 10% after turning in to the instructor a detailed outline of technology skills you need to improve upon and your plan to address those needs in order to pass the Level 1 Exam. You will have the option to retake the test before the course ends, but you will definitely need to pass the exam before you graduate from the IB/M Program.

Optional Extra Credit (3 points)

- Teach an optional session to a classmate that did not pass Level 1 Exam.
- Extend lesson plan project into a larger unit or detailed web quest.

Evaluation Plan

Formative Evaluation

The purpose of formative evaluation is to examine the usability (feasibility) and usefulness (effectiveness) of the course so that we may improve it. The formative evaluation of EPSY 240 is concerned with whether the stated objectives are met. It will be carried out according to Dick and Carey's (1985) three stages. Each stage consists of a tryout of the instructional material or program with a different sample of potential students.

One-to-One Testing

In this stage, each student (from the target student audience) will be presented with individual elements (scenarios, student guidebook, web companions, treasure hunting items, assessment, i.e. use of PowerPoint scenario) of the course while their performance is closely monitored. Both an instructional designer and a subject matter expert (i.e. expert of PowerPoint)

will be monitors. Different types of information will be collected by subjects' verbal feedback, subjects' answers of an attitude questionnaire, and recording of their activity:

a. Accuracy of the estimation of learner's entry capability. Learners should feel no difficulty when they start. (Our course requires no prerequisite skills.)

b. Clarity of the presentation of instruction.

c. Difficulty and adequacy of each step of instruction. Whether each step of instruction is within appropriate position in learner's Zone of Proximal Development.

d. Distribution of time consumed in each part of the instruction.

e. Giving subjects relative assessment questions after instruction (i.e. final exam) and testing if the assessment questions and directions are clear and represent the instruction materials.

f. Testing whether the learning outcome meets learner's expectations.

Small-Group Testing

In this stage, a group of 3 students (the group size is determined by the real group size in future classrooms) will be presented with individual topics (i.e. a PowerPoint scenario with relative student guidebook and web companion) and still, be monitored by an instructional designer and a subject matter expert. Different types of information will be collected by subjects' verbal feedback, subjects' answers of an attitude questionnaire, and recording of their activity:

a. Clarity of the presentation of instruction.

b. Difficulty and adequacy of each step of instruction. Whether each step of instruction is within appropriate position in learner's Zone of Proximal Development.

c. Distribution of time consumed in each part of the scenario.

d. How much interaction occurs in the group.

e. Students' interest and motivation.

f. Acquisition of skills (by giving them a pretest and a posttest)

Field Trial

In this stage, a larger group of students, along with an instructor, will try out the course (one or more scenarios). Attitude questionnaire will be given to both the instructor and the students. The classroom will be monitored. Following information will be collected:

a. Instructor's motivation and interest.

b. Instructor's quality of instruction.

c. Students' feeling of difficulty and adequacy of each step of instruction. Whether each step of instruction is within appropriate position in learner's Zone of Proximal Development.

d. Students' interest and motivation

e. Classroom interactions

f. Acquisition of skills (by giving them a pretest and posttest)

Summative Evaluation

The purpose of summative evaluation is to draw a conclusion on how well the new course works in order to decide whether the new course is to be adopted. Learning outcome will be compared between the new course and the current EPSY 240 (which the new course design intends to replace). Information to be collected and methods to be carried out are as follows:

a. Students' performance on Level 1 assessment (by comparing the score with last year's).

b. Students' overall technology skills (by comparing their performance in assessment with last year's).

c. Students' interest and motivation in classroom (by monitoring and questionnaire).

d. Students' feeling of achievement of expectation (by questionnaire).

Limitations

1. Reliability of same procedures across different designers in terms of collecting interview data

2. Reliability of theme generation by looking for patterns, instead of following strict qualitative research procedures

3. Because we received data from student pre/post tests so late, we did not have time to analyze data to reflect students needs

4. What would we have done with more time; should we finish our paper with a proposal to Mike to complete these things this summer (:-)

5. No time to analyze post-test data (did qualitative eyeball, but no quantitative analysis)

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Appendix

I. List of interview questions for faculty
II. List of questions included in student evaluations for EPSY 240
III. Raw data collected
    a. Student evaluations
    b. Faculty interviews
IV. Miscellaneous assessment ideas
V. Comparison of revised and prior syllabus schedules
VI. Visual of website
    a. homepage
    b. syllabus
    c. objectives
    d. grading procedures
VII. Student Guidebook (Table of Contents)
VIII. Summary of Proposed Lesson Plan Project with rubric for assessment

Interview Questions

The following questionnaire was used in the interviews with staff and faculty.

ID Number: _____ Position: _____ Interview Date: _____

Interviewer's Name: _____ Length of Interview: _____

1. What do you do, and what are your responsibilities, especially with regards to pre-service teachers?

2A. What do you perceive the range of technology skills of your preservice teachers, especially as regards to when they enter the IB/M program versus when they graduate?

2B. What would you like students to know about technology when they enter your class as pre-service teachers? (please list each idea separately)

3. What would you like students to know about technology when they graduate from UConn's School of Education program and move out into the teaching force?

4. In your area of responsibility, what (if anything) do you perceive as the specific technology needs of teachers, now and say for the next five years, and especially as they differ from current uses of technology (e.g. for instruction, decision-making, assessment, communication, classroom management, professional development)

5. Listed below are some of the technology resources available to faculty and students at the University of Connecticut. Please rate each technology tool below in terms of how useful you consider each to be in your class for meeting instructional or learning needs.
(Very Useful:VU; Somewhat Useful:SU Not useful:NU; Don't Know What Is:DK)

- ❑ *Word Processors* *VU SU NU DK*
- ❑ *Desktop Publishing Software* *VU SU NU DK*
- ❑ *Spreadsheets* *VU SU NU DK*
- ❑ *Databases* *VU SU NU DK*
- ❑ *Electronic Graphics Tools* *VU SU NU DK*
- ❑ *Email* *VU SU NU DK*
- ❑ *Web-Based Authoring/Editing Programs* *VU SU NU DK*
- ❑ *Internet as medium for Online Instruction* *VU SU NU DK*
- ❑ *Internet for Research* *VU SU NU DK*
- ❑ *Simulations* *VU SU NU DK*
- ❑ *Math/Science probes* *VU SU NU DK*
- ❑ *Robotics Tools* *VU SU NU DK*
- ❑ *Other:* *VU SU NU DK*

6. In your opinion, what might be some effective instructional strategies for helping pre-service teachers to see the connections between curriculum objectives in their methods courses and technology uses in Educational Technology course?

7. Where and how do you perceive technology can be of benefit or a problem in the schools and in terms of your specific areas of responsibility?

8. What are your feelings about using college class time to assist students in learning the features of a software program if instruction is provided within the context of an integrated content area topic? (ex. Within the context of a session that models the task of creating an electronic newspaper in response to a language arts or history topic, instruction leaves time for students to become more aware of the particular features of Microsoft Word or Publisher…is this time a valid use of class time for the pre-service teacher?).

9. Is there a particular lesson/topic/task you teach in your teacher preparation courses that we may borrow to share with students as an example of an authentic content area objective that could be enhanced through the use of technology? (software, Internet, electronic tools)

10. Are you familiar with what is currently covered in the 1 credit Educational Technology 240 class? (if yes, ask to explain) (if no, just explain that all new students accepted into the Education program are required to take)

11. Are you familiar with the technologies introduced in the "treasure hunt" in EdTech 240 and aware that it is available in UCEML for integration into other teacher prep courses? (if yes, ask to explain) (if no, just explain that all new students accepted into the Education program are required to take)

12. Are you familiar with the competencies currently measured by the "Level I Assessment"? (MS Office, Internet, e-mail)?

13. Who else might we contact to good advice about what future teachers need to know concerning educational technology?

14. Is there anything we didn't think to ask you that might be important?

15. Would you like to ask us anything?

On back, What's your overall feel for this interviewee's position?

Informed Consent Form

University of Connecticut
Neag School of Education
M/S U-2033
Storrs, CT 06269

We are a group of Masters and doctoral degree candidates conducting a needs analysis as part of a class assignment in instructional design for EPSY 356 (Instructional Design) being taught by Dr. Michael Young in the Spring 2002. We are gathering data and want to interview you to help us assess the technology-related needs of pre-service teachers, especially as regards the School of Education's EPSY 240 course (Technology in Education). (EPSY 240 is a required one-unit course for pre-service teachers that introduces them to educational technology and is taught each fall by Dr. Young.)

We would like to highlight the following points regarding the interview:

- CONFIDENTIALITY: We will make every reasonable attempt to keep your contributions confidential, but in fact CANNOT guarantee confidentiality. We are interviewing a small number of individuals here at the school, who are well acquainted with each other, and as such, there may be too much opportunity for inadvertent disclosure. As such, we desire the interview and discussion to be completely open and above board. We do guarantee that we will not disseminate or share a verbatim or substantially verbatim form of the notes or transcripts of this interview, except among ourselves.
- Information we get from you will only be used in our course work and in devising technology education for pre-service teachers, and will likely be shared in a synopsized form with Dr. Young for the purposes of obtaining feedback on our course-related work.
- This project was entirely initiated at student request, and truthfully, has nothing to do with the NCATE or any other activities here at the School of Education. We wish to make this point to allay any concerns about the apparent coincidence of our project with other efforts and concerns as such may currently exist in the school.
- Please sign below and initial if you give us permission to make an audio recording of the interview. The recording will be used strictly to assure accuracy in our notes and will be destroyed as soon as possible, and in no circumstances will be kept for more than a week.

We believe that our research will give us important information on ways to improve the technology education of the school's pre-service teachers. Please feel free to contact any of us at anytime if you have further thoughts or questions.

Thank you

Signature: _____ Date: _____

Name (Printed) :_____

_____ Please initial if you give permission to audio record the interview.

Themes from EPSY 240 Student Comments

This section lists the themes obtained from analyzing student comments from the prior year's students. These comments were hand written on the standard course evaluation sheets filled out at the end of the course by almost all of the students on the last day of the lab section meeting. There were over 100 evaluations (of a total of enrollment of approximately 120 students). Approximately 75% of the evaluations had comments written on them. Each comment was assigned to one or more themes as seemed appropriate, with new themes being developed as comments did not readily fit within existing themes. Some comments were assigned to multiple themes. The ISTE Professional Standards for technology are listed at the end as a "theme" as much as a reminder as anything that these need to be incorporated in the course content also.

Clear organization and clear communication of that organization to students

- More guidance on the final lesson plan
- Explain goals & assignments more accurately
- More organization
- Need a clear purpose for each lecture.
- *Relevant and practical and clear objectives*
- *Homework application*
- Syllabus, objectives, exams and assignments are confusing, (esp. the exam, it's useless, confusing, not a proof of learned knowledge), many student said they learned nothing from this class.
- The actual class time was spent clearing up confusion on assignments rather than actual content material.
- The curriculum is terrible because I don't have previous knowledge of the course materials.

Expectations for <u>assessment</u> in Ed Tech 240 should be made clear and match instruction

- Some TAs give extra credit, some don't – it is not fair

- Don't reward students by having them do a 2nd presentation
- start work lesson plan project earlier
- *Better exam*
- *Homework application*

Learning objectives and tasks for Ed Tech 240 should be <u>practical</u> and <u>focused</u>.

- Hands-on labs
- Reflect on practical examples
- *Homework application*
- Hands-on activities are very effective
- Many subjects are not of practical usage.

Support for preparation of and practicing skills for the Level 1 competency exam.

- More time preparing for level 1 exam
- Technology home work that made us learn the actual computer applications
- Teach computer skills
- *Homework application*
- I like to be taught Powerpoint or Excel instead of just being tested on them.
- I like to be taught to use programs, not be asked to figure it out.

Be exposed to a wide variety of technologies suitable for classroom-related work.

- Learn more about different types of technology
- more hands-on stuff but not the treasure hunt
- more exciting activities
- Technology showcase was good
- Less names of programs and more in depth
- Lots of interesting examples and create a PowerPoint presentation
- *Homework application*
- I would like them to intensely focus on one or two things instead of a broad range of technology.
- Something about networking and how and why it works – every teacher has to deal with this but nobody has a clue about it.

Miscellaneous

- Open forum of discussion
- *Time for reflection*
- Too much for a 1 credit class
- Situation with TAs is a tough quality control problem.
- MY: 240 is supposed to infuse / inform / be a gateway to technology for entire IBM program; 240 should be "clever" use of technology.
- Many schools and supervising teahers give the student teachers little or no access to technology and this should be at least spoken about in 240.

ISTE Professional Standards

- Graduating pre-service teachers are expected to be able to (taken from http://nets.iste.org/genpro.html, April 2002):

1. demonstrate a sound understanding of the nature an operation of technology systems. (I)*
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. (I)*
3. use technology tools and information resources to increase productivity, promote creativity, and facilitate academic learning. (I, III, IV, V)
4. use content-specific tools (e.g., software, simulation, environmental robes, graphing calculators, exploratory environments, Web tools) to support learning and research. (I, III, V)*
5. use technology resources to facilitate higher order and complex thinking skills, including problem solving, critical thinking, informed decision making, knowledge construction, and creativity. (I, III, V)*
6. collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works using productivity tools. (I, V)*
7. use technology to locate, evaluate, and collect information from a variety of sources. (I, IV, V)*
8. use technology tools to process data and report results. (I, III, IV, V)*
9. use technology in the development of strategies for solving problems in the real world. (I, III, V)*
10. observe and experience the use of technology in their major field of study. (III, V)
11. use technology tools and resources for managing and communicating information (e.g., finances, schedules, addresses, purchases, correspondence). (I, V)

12. evaluate and select new information resources and technological innovations based on their appropriateness to specific tasks. (I, III, IV, V)*
13. use a variety of media and formats, including telecommunications, to collaborate, publish, and interact with peers, experts, and other audiences. (I, V)*
14. demonstrate an understanding of the legal, ethical, cultural, and societal issues related to technology. (VI)*
15. exhibit positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity. (V, VI)*
16. discuss diversity issues related to electronic media. (I, VI)
17. discuss the health and safety issues related to technology use. (VI)

* Adapted from the ISTE National Educational Technology Standards for Students

Roman numerals in parenthesis above refer to following ISTE standards categories:

- I Technology operations and concepts
- II Planning & designing learning environments & experiences
- III Teaching, learning, and the curriculum
- IV Assessment and evaluatin
- V Productivity and professional practice
- VI Social, ethical, legal, and human issues

Themes from Faculty and Staff Interviews

The section contains the data obtained from examining the interview notes and transcripts of interviews with faculty, administrative officers, and graduate assistants of the School of Education. Each was either recommended by the EPSY 240 instructor or was believed to likely have germane experience, thoughts, and opinions regarding the technology education needs of pre-service teacher education. The table below shows the break down of the interviewees.

Table – Breakdown of interviewees

Ed Psych faculty	3
EDCI faculty	5
School administrative officers	4
Graduate assistants	4

A balance was sought across the categories so that repeated themes would not have undue weight from being over represented by a larger number of individuals from a given category. The graduate assistants were all former teaching assistants of the EPSY 240 course or had strong instructional experiences in educational technology.

The same set of questions was utilized in all but two cases (the two cases being very constrained because of time limitations and so a cursory version of the questions was used), and see the Appendix for a list of the questions. The data was analyzed as described in the Methods section to identify themes that recurred across the interviews. The themes are listed below without regard to any particular priority as there was no methodology developed to create a prioritization.

Items listed below each them identify data points extracted from each interview which corresponded to or supported the given theme. They are just quick notes or a synopsis of a point made by an interviewee.

Support for preparation of and practicing skills for the Level 1 competency exam & related personal productivity software

- Level 1 requirements (email, WP, spreadsheet)
- how to get on and search Internet
- database
- jump among MS products and integrate them
- Use PPT (not just overheads)-be able to use multiple sources of data for creating their presentation-audio, video, images, graphics, etc.
- On-line resources and Uconn course resources for learning productivity software

Be exposed to a wide variety of technologies suitable for classroom-related work.

- Goal of the course is “awareness”
- Fundamentals about technology

- software programs that increase basic skill development
- integrate technology into education assignments
- be thoughtful and reflective about technology
- General knowledge of what technologies exist
- move awareness beyond assistive technology
- electronic data to add to their portfolios
- hands on experience teahes the limits of technology
- Raw technical facts are irrelevant to them
- We should not be teaching archaic technologies.
- Should teach students to be working with media specialist in schools.

Use of Internet and Internet technologies

- be aware that there are resources available online
- instructional methods for using the Internet (Internet Workshop, Internet Project, Internet Inquiry and Webquest)
- use WWW as resource for lesson plans and curriculum material; know what web support pages exist for teacher
- Conduct collaborative world-wide inquiry (i.e. oooperation with scientific data collection)
- being able to dialogue/evaluate (be "web literate", evaluate "correctness" of information, can evaluate good vs. garbage sites)
- problem solve by looking at websites
- WebCT for online instruction
- government sources of literacy reports, legislative initiatives, law
- communicate with agencies and each other as professionals
- professional listservs
- create a basic classroom webpage
- Sharing findings with others
- virtual tours
- submit course work in electronic form

Use of technology to support pedagogy

- Pedagogy comes before technology
- understand value and use and be able to speak to the issues; use technology in a discipline and then ways to enhance learning

- How to use technology to enhance student achievement
- More important at secondary level to be able to integrate into content area
- How to integrate technology into their teaching
- enhance student learning in all courses to enhance teaching
- How to get kids engaged in projects using technology
- authentic assessment with online tools
- Tie into methods class students are taking
- get away from content and focusing on methodology
- case studies

Personal and professional use of technology

- Personal use of technolog
- comfort level and attitude of being willing to explore and use technology in teaching
- Awareness of the importance of technology in their future
- technology such as efficiently figuring grades
- become smart consumers
- deal with the frustration of change
- Graphics tools
- web-based authoring programs
- Desktop Publishing software

Miscellaneous

- 240 should be linked to the rest of their program
- realize that technology is a tool that will never replace the teacher
- use database driven decision making (with faculty)
- prepare teachers to be open to change and accepting of need for lifelong learning
- flexible about new Internet technologies like digital editing and new literacies
- make use of [other course resources] for reflection about technology
- teach students technology culture issues
- articulate what research says regarding use of technology and classroom
- The treasure hunt is a mixed beast
- formal experience with lesson plans

Problems with technology

- bandwith issues in schools, policies with classroom webpages
- expense, obsolescence, upgrading
- overreliance on technology with no plan B
- filters and plug-in issues in schools, bandwith issues in schools, policies with classroom webpage
- existing teahers are intimidated
- System unavailability
- Need for backups and general computer literacy
- Limited access and equipment
- Wide range of skills of students and teachers
- Many on-line distractions to students
- Wide variability of equipment (i.e., Macs, PCs, new versions of software, etc.)

Miscellaneous Assessment Ideas

Most of these are intended as a weekly homework assignment that TAs could choose among (with some obviously not being homework such as the midterm).

1. A student can substitute tutoring for a Level 1 style homework assignment. Both students must sign a statement saying that the tutoring occurred.

2. Early homework assignment: Have students fill out a simple survey of the schools that they observe in (# Macs / # PCs in classroom; # of students they observed that week interacting with a computer; uses of computers that they observed; amount computers were idle; number of problems or difficulties they observed; find out something about school's media specialist (name?); etc.) Then have them enter their results into an on-line database so the results are easily collated.

3. Revise the current midterm.

4. Stick with the current lesson plan project as the final project (but provide supports for teaching basic concepts of lesson plans).

5. Create a BEST-like video of their teaching instead of doing the lesson plan project. They must use some sort of meaningful technology in what they teach. (What about releases? I guess they will have to do it off-line?)

6. Submit a learning plan/agenda for how and what they are going to learn about technology by the time they graduate. It should be specific as to how they will learn (see my rubric for it).

7. Screening pre-test for Level I

8. Read two short case studies each week and answer some simple questions in an on-line database (so TA's don't have to grade, but can easily track); the questions/quiz could be setup in a 240 WebCT area.

9. Write a simple (one page) lesson plan for one of the Treasure Hunt technologies.

10. Build a simple personal web page at a public web-building site (and email URL so TA can just double click in email message).

11. Evaluate three websites with a simple rubric and enter the information into an on-line database.

12. Have students create a simple webquest.

13. Need some sort of homework assignment for copyright and appropriate use.

14. Need some sort of homework assignment for assistive technologies.

15. Have students dismantle and reassemble an old computer.

16. Students shoot and digitize some simple video footage. (This should be a treasure hunt item).

17. Install a bunch of plug-ins on their personal web browser such as RealPlayer, Shockwave, QuickTime, Flash, (what else?).

18. Something on basic networking concepts (internet addresses and names, domain name resolution & IP address translation, HTTP versus say FTP).

19. Word association puzzle – Create a bunch of cards with a technical word or concept on each, and another set of cards with the corresponding definitions; students must match the terms and definitions. Then do Tech Jeopardy. (This really isn't a homework assignment, but more an in-class lesson).

Comparison of Revised and Prior Syllabus Schedules

	Weekly Topics	
Week	**Revised Course**	**Prior Course**
1	Lecture Hall: Course Introduction	Lecture Hall: Same
2	Lab Introduction	Lecture Hall: HW & SW Basics Fair Use, Copyright
3	Terminology & concepts	Lab Introduction
4	Lesson plans & PowerPoint introduction	Terminology & HW basics, Tech Jeopardy
5	Technology Treasure Hunt: Part I	Treasure Hunt I
6	Technology Treasure Hunt: Part II	Treasure Hunt II
7	Networking and Internet technologies	Databases, Search, & Spreadsheet
8	Midterm	Covers Basic Computer HW & SW conceptual knowledge
9	Evaluating Websites and using Databases	Advanced Word processing
10	Advanced ord processing	Presentation software
11	Lesson plan working session	Hypertext & Multimedia (e.g. Web & HyperStudio) WebQuest homepage
12	Lesson Plan Project presentations in lab	Lesson plan working session Exit Survey
13	Lecture Hall: TA presentations of all Lesson Plan Projects	Lecture Hall: Sharing Day Lesson Plan Fest