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## Computer based training for new California State University, San Bernardino faculty

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**COMPUTER BASED TRAINING FOR NEW  
CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO FACULTY**

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**A Project  
Presented to the  
Faculty of  
California State University,  
San Bernardino**

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**In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts  
in  
Education**

---

**by  
Saviniano Samuel Perez III**

**June 1998**

COMPUTER BASED TRAINING FOR NEW  
CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO FACULTY

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by

Saviniano Samuel Perez III

June 1998

Approved by:

  
James Monaghan, First Reader

8-6-98  
Date

  
Sylvester Roberston, Second Reader

## ABSTRACT

The project's goal is to develop training courseware for new faculty at California State University, San Bernardino. The courseware presents classroom learning scenarios and teaching strategies that support the construction of the faculty member's teaching and learning philosophy and a five year teaching plan. The courseware's graphic user interface was developed in Authorware with a left-aligned navigation menu, non-linear hypertext links and multi-functional frames embedded in a single screen.

A 25 question survey was taken by two faculty and three students to evaluate several components of the courseware. A Likert scale and open-ended questions were used to evaluate the graphic-user interface design, training objectives, learning scenarios, creation of learning philosophy, construction of teaching philosophy and the professional development plan. Data from the evaluation appeared to indicate that the courseware was easy to navigate and that the content material was logical and interrelated.

The software was modified based on feedback from the evaluators. The following suggestions were incorporated in the courseware: a blue color highlight was used throughout the courseware to indicate hypertext links; a larger font was used for easier reading and a bibliography section was added.

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## CHAPTER ONE

### Introduction

University faculty development programs provide means of improving instruction in the classroom. Albright (1988) observes that most programs cater to course development and specific instructional problems. Albright identifies various instructional development activities that can be undertaken in a faculty development program. Course related activities can be designed to address specific instructional problems. For example, faculty development courses can be reconstructed to enhance student performance in licensing exams. Another faculty development activity may involve developing general teaching skills among faculty members. For instance, new faculty orientation can be conducted in a luncheon or seminar format. A production related activity involves the development of instructional materials. These materials could take in the form of computer slide presentations, multimedia software and even videotape projects. Lastly, faculty can be provided assistance in using various media resources in different instructional contexts.

New faculty development programs can be found in different structural variations. These parallel teacher training structures will be discussed and the functions each structure provides. According to Wright (1998) structural variations may address different faculty and institutional needs. A single campus wide faculty development center can be organized to design and implement program activities that support broad academic goals. This type of

set-up, provides faculty with skill-building workshops, seminars and conferences. Other informal interactions such as luncheon-discussion groups provide avenues for networking and sharing of ideas. A campus wide center can be set-up to serve not only new faculty but as well as senior faculty seeking new approaches to their teaching. Another set-up is a multi-campus cooperative set-up which allows programs and resources to be coordinated for several campuses. Resources are usually administered from a central coordinating council. Multi-campus cooperative programs offer diverse teaching expertise and resources for collaborative training workshops, retreats. A special purpose center is another structure that can be used with defined development goals serving a specific audience. The development goals can be as limited as preparing faculty to handle an orientation course for freshmen. Resource materials are also provided under this set-up. Lastly, development components of other academic programs can be structured to be limited in program activities and operate under an institutional unit. While the program activities in this set-up does not vary from other faculty development programs, responsibility for program development may reside in a faculty committee.

Initial evaluation of various websites of major west coast universities was done last May, 1998 to compare other faculty development programs. For example, the University of Southern California's (USC) Center for Excellence in Teaching (CET) website (May, 1998) index for one, posts a new faculty



orientation. The orientation is a two-day session featuring presentations by faculty, staff and administrators. Issues relating to teaching, overviews of the university structure, strategic planning and the student body were discussed in the orientation workshop. According to the website, computer-based training program for new faculty was not available for USC new faculty.

University of California at Berkeley has an Office of Educational Development (May, 1998) that handles workshops and seminars for its faculty. Its websites provide a hypertext link to general faculty development seminars. There is also a link to faculty teaching freshman seminars.

At the University of California at Los Angeles (UCLA), through its Office of Instructional Development (OID) (1998), consultation is available to faculty on teaching and learning. The OID offered faculty consultation services through individual appointments, workshops for groups and seminars tailored to specific schools within the university. According to the website, the OID does not offer computer-based teacher training.

At the University of California at Irvine (UCI), the Instructional Resource Center (IRC) (1998) offers computer-based teacher training. The IRC has developed a Teacher Training Instructional Program System (TTIPS) that runs on a Personal Computer Disk-Operating System (PC- DOS) hypertext program. The TTIPS is designed for instant reference in planning lessons and courses as well as teaching theories and strategies. However, TTIPS is not focused on new faculty development.

The survey of several major university websites showed that computer based training for new faculty was not widely available. Most workshops in the websites indices were observed to be geared towards teaching skills and strategies enhancement. There was no mention of learning theory workshops to complement the skills workshops.

The California State University System trains its new faculty using traditional methods employing workshops, seminars, and in-service training. The New Faculty Development Program of California State University, San Bernardino (CSUSB) is handled by the Teaching Resource Center (TRC). The TRC acts as the complementing training arm and develops workshops and seminars for new faculty.

The CSUSB Teaching Resource Center (TRC) has several goals. According to Teaching Resource Center (1998), it aims to promote effective and innovative instruction by providing services that lead to excellent teaching and active learning. The TRC places importance in promoting dialogue and communication on teaching and learning among faculty members. The TRC organizes quarterly workshops on teaching strategies and innovations. Some of the workshop topics included peer observation techniques, assessment, incorporating learning in multimedia projects, online teaching strategies and distance learning. Annually, a Spring Colloquium is organized to present faculty activities related to teaching strategies and innovations. The

colloquium features paper presentations, symposia, faculty exhibits, poster sessions and demonstrations.

The Teaching Resource Center (TRC) conducts a three year program for new faculty in cooperation with the Office of Academic Personnel. The program aims to support new faculty in developing individual agenda on teaching strategies appropriate to their disciplines. New faculty luncheons are conducted by the TRC to discuss instructional strategies as well as to function as an open forum for teaching and learning issues.

According to the Teaching Resource Center (1997), the California State University at San Bernardino (CSUSB) currently has eighteen (18) new faculty enrolled in its faculty development program. Fifteen (15) faculty members are from non-Education departments and three (3) faculty members are members of various departments of the CSUSB School of Education. Champagne and Waterman (1988) recognize that some new faculty may not have formal instruction in the skills of teaching. Champagne and Waterman note that some faculty may not be knowledgeable about the teaching process and may simply develop his or her own teaching skill by trial and error. In my opinion, faculty members who have not received formal teacher education will most likely benefit from a new faculty development course on teaching and learning theories. On the other hand, faculty members who received extensive teacher education either in the Masters or Doctorate level would less likely benefit from basic course material on teaching and learning theories.

In order to address training needs of CSUSB's new faculty development program, I propose computer based training (CBT) courseware. A CBT courseware allows for the design of a self-instructional teacher training environment. According to Lee and Mamone (1995) the following elements of a CBT makes it compatible to adult learning. The CBT provides a less stressful environment by allowing the user to have control over the pace of learning. The faculty member can select the content material that is most relevant to his or her own teaching discipline. Faculty members who wish to review instruction any time can repeat content material that is difficult to grasp. In my opinion, by providing a one on one user to computer ratio, the faculty member becomes more involved with his or her own learning. CBT courseware could be equipped with multimedia elements to reinforce and enhance the learning of the content material. In fact, Rouet, et al. (1996) note that hypertext links allow the user of a courseware to branch out to more in-depth information.

According to Lee and Mamone (1995) there are four (4) levels of computer-based training. Level 1 CBT involves the use of a video cassette recorder (VCR) with a television (TV) monitor. The video is linear and interaction limited to stopping and starting the presentation. Level 2 CBT includes the use of a computer hooked up to an external videodisk player. The user can access particular frames in the external videodisk in a linear restricted environment by the teacher. Level 3 CBT allows for an entry level

individualization of instruction. Instructional events are student controlled and hypertext linking occurs to other levels of information. Lastly, Level 4 CBT provides full simulation capabilities. Virtual reality simulations fall under this category offering a full range of audio, visual, tactile and kinesthetic experiences.

My intention was for the CSUSB new faculty courseware described here to be modeled after the Level 3 computer based training (CBT) of Lee and Mamone (1995). In my view, the Level 3 CBT is appropriate for the learning needs of the CSUSB new faculty because it allows for individualization of instruction through hypertext links and multimedia capabilities. Lee and Mamone suggest that users of a CBT are independent learners, computer literate and require less human interaction for verification and feedback. In my opinion, new faculty members will probably respond favorably to teacher training that considers their learning styles, needs and can adjust to the time availability of the faculty members.

## CHAPTER TWO

### Review of Literature

This review of literature presents various case studies and scenarios that were used as models and inspiration in developing the design and content material of the CSUSB new faculty development courseware. Current literature will be used to discuss the constructivist framework of the courseware. Each component of the courseware will be discussed that includes the learning scenarios, the creation of a teaching and learning philosophy and the construction of a teaching agenda.

Champagne and Waterman (1988) developed a minicourse workshop for junior faculty from a variety of disciplines and schools of the University of Pittsburg through their Office of Faculty Development. The course objective included requiring the faculty member to learn and use a highly selected body of teaching and learning. The faculty member was then asked to apply some of these ideas to his or her teaching situations through structured activities. The course content involved planning, instructing and evaluating components of teaching. The developers of the minicourse deliberately structured activities that did not relate specifically to the teaching discipline of any of their participants. The developers wanted faculty participants to see teaching issues could span the disciplines. As a result of this activity structure, other teaching interests were developed outside of their disciplinary specialties.

Johnson (1988) developed several self instructional modules for the Center for Teaching Excellence at the Texas A & M University. The modules were developed to cater to faculty who were reluctant to spend time attending workshops, seminars and symposiums. The formats of the modules include an overview of the module, a set of behavioral objectives, built-in exercises and a self-scored quiz at the end of the module. Some of module titles included "Enhancing College Teaching", "The Lecture Approach" and "Evaluating Student Progress". Over 700 requests for the self-instructional modules were made by the faculty of Texas A & M University.

Hatcher (1997) revealed findings from a self-directed learning workshop where trainees were expected to take responsibility for their own learning. Here trainees developed their own learning objectives, learning experiences and evaluating their own learning outcomes. The workshop used three case studies each reflecting a different training issue. Initial reaction from the trainees was discomfort about how they would approach learning. As participants discussed the learning plans, this helped create an environment conducive to communication, trust building and risk-taking. An evaluation of the workshop's outcomes showed that participants wanted greater control over their learning; the workshop had helped achieve that goal.

Marsh (1997) recommended a sales training simulation solution for Siebel Sales Enterprise. The solution utilized an interactive software simulation that delivered training in a safe, self-contained environment. A

“Show Me” simulation demonstrated how an application works by animating text entry and cursor movements through a series of steps. The “Try Me” simulation provided valuable hands on experience for the trainee. The trainees interacted with a simulated version of Siebel’s Sales System prior to working on the actual system. While training students on the Siebel system, both system specific skills and established data entry practices were taught. An evaluation of the program used in the Siebel project showed that audio prompts allowed the students to focus their attention on the screen as the task was being described. The audio prompts reduced the task of reading the text while focusing the students attention to the screen simulation.

Henderson et al. (1988) reported a successful program for new faculty at the State University of New York at Buffalo. The program was a four day microteaching videotaping in a small group setting. Four components comprise the program namely, course planning, discussion about teaching and learning, evaluation and presentation about teaching techniques and faculty assessment. It was found that faculty members were receptive to a hands-on approach in a supportive environment. The Buffalo experience showed that small group experience is not only appropriate for microteaching but also provides a venue to be critiqued by another faculty member outside his or her own department. Moreover, The faculty members found it important to receive immediate feedback from peer members from the ten minute videotaped lecture segment.



Cooper (1996) describes learning in a constructivist environment as problem solving based on personal discovery. In my opinion, from a constructivist framework, adults need a responsive environment that considers each individual's style. The CSUSB new faculty courseware is an attempt to design constructivist based training in a computer-based environment. The California State University at San Bernardino (CSUSB) new faculty courseware presents classroom learning scenarios to the user. These learning scenarios are an attempt to reflect situations that college faculty encounter in the classroom.

Gagne, et al. (1994) note that linear video and sound presentation engages both the auditory and visual senses. Caine, et al. (1994) note that if the same message can be presented in either text or sound and video presentations, the student has a choice of media to make connections to the content material. The first learning scenario in the CSUSB new faculty courseware has a QuickTime (Apple Computers, Inc. 1990- 98) video as part of the content material. Molnar (1997) relates that the multimedia experience turns abstraction and complexity into meaningful experience. In this project, I attempted to follow this framework in designing the first learning scenario in the courseware which provides visual and auditory experience using the QuickTime video. In my opinion, with this courseware, teachers can create instructional activities and resources that immerse the student in rich learning experiences.

Gagne, et al. (1994) relate that college faculty are perceived commonly as independent and self-paced learners. Gagne, et al. emphasize that the nature of instruction to college faculty should consider the use of high-order thinking strategies. Caine, et al. (1994) relate that adults in a higher-order learning environment should be able to apply a given strategy in a particular situation. In my opinion, from a constructivist framework, the courseware content material assists in the construction of a learning and teaching philosophy. This is made possible by the faculty user's study of the various learning scenarios as well as the teaching and learning philosophies.

According to Krauss (1996), multimedia makes it possible for the student to search for information based on his or her own individual preferences and prior knowledge. Krauss views multimedia elements such as hypertext as an empowering tool when a student can control the non-linear instructional material. As content material is learned from various perspectives in a multimedia environment, Krauss notes that students develop their own conceptual links on the content material. Barr and Tagg (1995) note that knowledge is not seen as cumulative and linear but as a nesting and interacting of knowledge frameworks. The teacher can integrate collaborative multimedia projects in the classroom. Barr and Tagg note that students are empowered to take the responsibility for their own learning as they interact with the computer in designing their own instructional materials.

Duffy and Savery (1996) stress that information sources do not teach, but rather support the learner's inquiry. The instructional elements of the CSUSB new faculty courseware consist of hypertext, QuickTime (Apple Computers, Inc. 1990-98) video and text information. In my opinion, the purpose of the courseware's information resources is to foster development of professional teaching insights.

Gagne, et al. (1992) stress that self-instruction is appropriate for adult users. Barr and Tagg (1995) emphasize that a constructivist learning environment is learner centered and controlled. The CSUSB new faculty courseware allows the user to self-instruct on the teaching and learning content material. The instructional elements of the courseware provide a medium for which self-instruction is made possible. In my perspective, the courseware is designed to be "teacherless" allowing the user to have greater autonomy in making learning choices.

Cooper (1996) relates that a constructivist learning environment enables adult learners control over their learning environment. Gagne, et al. (1992) note that the use of individualized instruction permits more freedom of choice on the part of the learner, depending on the extent to which the teacher sets the objectives. The CSUSB new faculty courseware allows the user to have control over the pace, amount of content to be learned and sequence of the material. The user of the courseware is tasked to construct a learning and teaching philosophy. In order to accomplish this goal, the user can choose

from the learning scenarios that are designed to help construct both philosophies.

The CSUSB new faculty courseware provides the user the learning goals of the computer based training. Duffy and Savery (1996) note that the learner must be able to know the purpose of the activity. The learning goals are explained in the introductory section of the courseware. In my opinion, these goals allow the learner to select what prior knowledge they will bring in for the activity. Rouet, et al. (1996) explain that learning goals allow the user to set-up a mental model for constructing new understanding and knowledge. Gagne, et al. (1992) note that course objectives for adult learners may be more precise and specific. This courseware was designed to allow teachers to customize course objectives to reflect various adult learning styles.

Duffy and Savery (1996) suggest that the learning activities must be anchored to a larger task. The expected outcome of the CSUSB new faculty courseware is the construction of a professional teaching career plan. Several activities within the courseware support the development of a teaching plan. These activities are based on common learning scenarios in the classroom and the construction of a learning and a teaching philosophy. The activities are intended to help the users reflect on their own teaching skills, styles, interests and motivation.

Duffy and Savery (1996) suggest that adult learners should be given ownership of the overall learning task. The expected outcome of the

courseware is for the user to develop his or her own teaching plan. Duffy and Savery (1996) relate that ownership of the learning task should not just occur at the end of the courseware. In this spirit, from the start, the user is asked to develop his or her own learning as well as a teaching philosophy. I designed the courseware to involve the user and to have authorship of the output.

Caine, et al. (1994) recognize that learning outcomes for adult learners are complex. Caine, et al. emphasize the importance of reorganizing information in both predictable and unpredictable outcomes. The courseware was designed to provide flexibility for the user to construct his or her own personalized teaching and learning philosophy. Furthermore, the creation of a professional teaching plan provides a culminating activity wherein the user can choose to apply knowledge gained from the teaching and learning philosophies and translate these into concrete teaching objectives and strategies.

In my view, adult learners should be provided an opportunity to become independent learners. Keegan and Rose (1997) affirm the value of a training that is based on an anytime, anywhere learning concept. The courseware provides the flexibility in providing the user the needed training at a moment's notice.

As the CSUSB new faculty courseware is intended to individualize learning, Caine, et al. (1994) note that the adult learner will benefit from a comfortable and relaxed learning environment. In my opinion, with the user's

ability to have control over the pace, duration and depth of the content material to be covered, the stress associated with learning unfamiliar or new material becomes less apparent. Caine, et al. stress the importance of establishing an environment for safe risk taking. The use of rigorous learning structures such as drill exercises are not part of the courseware. Moreover, Barr and Tagg (1995) place importance in a learning environment that is supportive. In the courseware, the learning scenarios and teaching strategies function as contextual cues in assisting the development of a learning and teaching philosophy. In my perspective, the role of the user is to combine prior knowledge on the material content and new knowledge learned in the courseware and transform these into a personal teaching and learning philosophy.

## CHAPTER THREE

### Statement of Goals and Objectives

The proposed computer based training (CBT) courseware will attempt to compliment CSUSB's new faculty development. New instructors and junior faculty who have had less formal training in education are the target users of the CBT courseware. In my perspective, faculty members who were not trained to be teachers will receive the most benefit from a faculty development course on teaching theories and strategies.

The CBT will present contemporary instructional and learning theories suited for a higher-education teaching and learning environment. The CBT proposes to integrate theory into practice. In my view, learning strategies and instructional implications will help teachers construct a teaching philosophy for his or her own respective discipline. Keegan and Rose (1997) note that consistency is part of a computer-based training. The training objectives are designed to be consistent with the content material and the intended learning outcomes of the courseware. Moreover, the content material is designed to assist the user accomplish the expected learning output.

The CBT courseware is structured on a training-on-demand framework. Lee and Mamone (1995) discuss the need for adult learners to have the ability to exercise greater control over their learning environment. Lee and Mamone emphasize that the adult learner should be able to customize the venue, time of availability and set the goals for training to be delivered. Hatcher (1997) notes

that computer based training is a viable method of accommodating the learning styles and needs of adults. The CBT courseware is an attempt to empower the faculty member to control the pace, length of training and to allow greater accessibility to use the courseware without the constraint of a time-structured training workshop.

### **Training Objectives**

Presented below are the training objectives of the courseware.

- 1) Serve as a refresher course for learning theories and instructional strategies
- 2) Orient new faculty on current technology-based instruction
- 3) Reflect on one's teaching and learning philosophy

### **Features of the Courseware**

- 1) Training on demand - user determines time, pace and venue of the training
- 2) Hierarchical Hypertext- user chooses path through multiple screens of information
- 3) Constructivist Approach - user is expected to participate in the construction of his or her own teaching and learning philosophy



## Expected Outcomes of the Courseware

- 1) The creation of a brief teaching and learning philosophy
- 2) The development of a two (2) year teaching plan

The CBT courseware shall be structured with a four-stage learning design. The first stage will entail immersing the user with five learning scenarios which may be experienced in the classroom. Each scenario will include teaching strategies. The user has the option to non-linearly examine one learning scenario. The user can just view one learning scenario and move on to the next stage in the CBT courseware.

The next stage in the courseware involves the user creating his or her own learning philosophy. This stage will present three theories in text format in a hypertext environment. These theories are cognitive, behavioral and humanistic. These theories form part of the content of the courseware rather than comprise the conceptual framework of the courseware. It is intended that these theories will guide the user in developing the learning and teaching philosophy as well as the professional development plan.

The next stage involves the user creating his or her own teaching philosophy. Questions will be posed for the user involving student motivation, teacher-student connections, accommodations for different learning styles and teaching styles in the classroom. The user is expected to create a four (4)

sentence teaching philosophy statement based on the responses from the questions.

The last stage of the courseware is the design of a two (2) year teaching career plan. In my opinion, a two (2) year teaching plan timeline allows the faculty member to set goals that are realistic and doable. This stage covers professional goals setting and strategies to achieve the goal. A professional development matrix will be filled-out by the user. This matrix is designed with open-ended response type questions. These questions are intended to draw out the user's professional development goals, proposed academic service activity and proposed innovation in teaching in their discipline.

The proposed courseware involves the development of the learning structure, content, activities, and graphic-user interface screens. The courseware will be a prototype of computer-based training to be provided to new faculty at California State University at San Bernardino. The content of the courseware will not be discipline specific. Rather, several teaching disciplines can be addressed by the courseware. The sequence and structure of the learning process is in its development phase. An evaluation of the courseware is provided in this project. The courseware uses an evaluation version of Authorware 3.5.

## CHAPTER FOUR

### Design and Development

Authorware ( Macromedia, Inc. 1994-1998) was the authoring tool used for the development of this computer-based training courseware. Authorware is a powerful development tool for integrating graphics, text, and QuickTime (Apple Computers, Inc. 1995-1998) videos in a non-linear format. The software features information branching, non-linear sequencing, question and answer loops for input functions.

The selection of a computer based training program was made using various criteria. Gagne, et al. (1992) consider three criteria; namely, physical attributes of the media, task characteristics and learner characteristics. Macromedia Authorware was chosen as the development tool because of its capabilities of being able to combine text, QuickTime (Apple Computers, Inc. 1995-1998) video and audio in a non-linear hierarchical structure. The software Director (Macromedia Inc. 1994-1998) was not selected because it is primarily suited for linear multimedia production. Hyperstudio (Wagner Publishing, Inc. 1990-1998) was also not selected because it could not support frames oriented graphic user interface design. Also, Hyperstudio does not allow for multi-functional screens embedded in a single screen.

Authorware operates on a flowchart structure. A framework within the flowchart allows the construction of a subset of activities containing text, graphics, video and response type items. A main menu can branch into other

information screens within the flowchart. Navigation functions can be added allowing user to move forward, backward or jump into other information screens.

Authorware can be programmed to accommodate a wide variety of instructional activities in its training structure. Instructional activities can be structured to allow presentation of content material and case studies. Project activities, either individual or collaborative, can be included to compliment course content material.

#### Graphic User-Interface Design

The graphic user interface was designed with the user in mind. The navigation buttons are positioned vertically left-aligned on the screen. Rouet, et al. (1996) note that an advantage of a left oriented window is it reduces eye movements and regressions. The natural reading path is oriented to search from left to right in western cultures. In my opinion, the apparent disadvantage is only a limited space is available in this width type of orientation.

In my observation, a left design lay-out is commonly found in most well-designed hypertext-based web sites. The courseware graphic interface is similar in lay-out to a frames oriented left- positioned navigation menu. Rouet, et al. (1996) relate that information structured in a hypertext design allows information to be represented in hierarchical arrangement where multiple related screens are connected and accessible to each other. Shneiderman (1987) relates that hypertext permits the user to choose the path through

multiple screens that are relevant to his or her own experience and needs.

Shneiderman notes that associative paths found in a hypertext structure provides for personalization and flexibility in retrieving and reading information.

The lay-out of the text screen allows easy access and retrieval of the material. Rouet, et al. (1996) note that the lay-out of the screen should support familiar reading strategies. Rouet, et al. report that a top-down approach of displaying the information allows a similar approximation of reading linear text. In my opinion, the user should be able to navigate through the text material in a coherent and logical manner. The interface is equipped with arrow indicators that provide clear indication of where the user is in the CSUSB new faculty courseware. A different typeface and color allow titles to easily be noticed. Rouet, et al. note that navigational position cues allow the user to create a visual mind map of his or her location in the courseware.

Rouet, et al. (1996) note that the designed hypertext should not only provide access to other areas in the material but also provide relevant and meaningful connections for adult readers. The hypertext links are designed as questions to elicit interest in the user. Clicking on the hypertext question provides a set of answers with which the adult user can develop a meaningful understanding of this body of information. Navigation controls allow the user to exit each lower level of the hierarchy of information and return to the main menu. This format is followed throughout the courseware.

In my design, content material comprehension is aided by structural cues in the courseware. Rouet, et al. (1996) report that headings, connectives and other text organizers facilitate text comprehension. The CSUSB new faculty courseware has navigation headings and hypertext question links which are organized in hierarchical linking structures. In my perspective, a hierarchy system allows faster selection of options than in an alphabetically arranged index. Rouet, et al. note that a hierarchical system helps the user build a coherent mental model of the hypertext structure of the courseware.

The fonts used in the screens are non-cursive and non-italicized fonts. According to Shneiderman (1987), non-cursive and non-italicized fonts create a better resolution for computer text screen characters. Rouet, et al. (1996) note on a study conducted by Gould (1987) that reading time was slower on a computer screen as compared to reading the same text on paper. The results of Gould's study showed that on a better screen resolution with non-cursive and non-italicized fonts, the reading speed was comparable to reading the same text on paper.

### Software Evaluation

A questionnaire was devised and distributed to five respondents. The respondents were composed of (3) three students and (2) two teachers. The respondents were friends that sat down for an average of one hour to review the courseware and fill the evaluation form. It was observed that the

respondents were able to explore most of the hypertext links and the various menu buttons. Some respondents needed prompting in clicking on the blue-colored hypertextlinks. The criterion for selecting the respondents was the ability to point and click using the mouse. The questionnaire asked the respondents to evaluate the graphic user interface design, training objectives, learning scenarios, creation of a learning philosophy, construction of teaching philosophy and the professional development plan. The choices in the close-ended responses to the different courseware components in the questionnaire were "Always, Most of the time, Sometimes, Rarely and Never". An open-ended response section was included to allow respondents to provide other comments not included in the close-ended response section.

The following tabulation is a summary of the responses made in the close-ended response section of the questionnaire. The numbers under each response column represent the number of respondents that chose this particular response. The number zero indicates that no respondent chose this specific response. Some respondents did not answer all the question items.

### Graphical User Interface Design

	Always	Most of the time	Sometimes	Rarely	Never
1. The screen design has color contrast	4	1	0	0	0
2. The typeface used in the courseware is easy to read	2	3	0	0	0
3. I can navigate around the courseware	1	4	0	0	0
4. The menu buttons are easy to use	3	2	0	0	0

### Training Objectives

	Always	Most of the time	Sometimes	Rarely	Never
5. The training objectives are stated clearly	4	1	0	0	0
6. The training objectives are doable	3	2	0	0	0
7. The training objectives address my teaching and learning needs	3	2	0	0	0
8. The expected outcomes of the training are reasonable	2	2	0	0	0



### Learning Scenarios

	Always	Most of the time	Sometimes	Rarely	Never
9. I can identify with the learning scenarios used	2	2	0	0	0
10. The learning scenarios are insightful	3	1	1	0	0
11. The learning scenarios are relevant	3	1	1	0	0
12. The learning scenarios are easy to understand	3	1	1	0	0

### Creation of a Learning Philosophy

	Always	Most of the time	Sometimes	Rarely	Never
13. I acquired new knowledge on how learning occurs	3	1	1	0	0
14. The theories were easy to understand	2	3	0	0	0
15. The theories presented were current	4	1	0	0	0
16. The activity of this section was easy to do	3	2	0	0	0

### Construction of a Teaching Philosophy

	Always	Most of the time	Sometimes	Rarely	Never
17. The teaching theories presented are up to date	3	2	0	0	0
18. The theories presented are broad in application	2	3	0	0	0
19. The length of the activity was just right	2	3	0	0	0
20. I can create my own teaching philosophy using this section	3	2	0	0	0

### Professional Development Plan

	Always	Most of the time	Sometimes	Rarely	Never
21. The examples presented were clear	4	1	0	0	0
22. I can create my own plan using this section	3	2	0	0	0
23. The length of the activity was just right	3	2	0	0	0
24. The use of a matrix is appropriate for this activity	3	1	1	0	0

The following were the responses from the open-ended response section of the questionnaire. One respondent commented that it was easy to navigate around the courseware. Another respondent gave the comment that there was “relatively straightforward step-by-step progression from ideas to plans”. There was also “logical interrelationships between the main options and the content options”.

One respondent suggested to change the color of one subheading in the learning philosophy from the color blue to black. Apparently, the subheading looked like a link that can be clicked on. The respondent was familiar with Internet hypertext links that were blue in color. This suggestion was incorporated in the final changes made in the courseware.

Another suggestion was made to use another background color besides white. The respondent remarked it was difficult to read the text with the white background. In my opinion, the white background provided a good contrast with the black text used. The other four respondents did not view this as a problem in reading the text.

One respondent suggested to use a larger or darker font. A larger font size was incorporated in the final version and in my view, could provide easier reading for the users of the courseware.

Three respondents gave feedback on the content material. The material was easy to understand and served as a refresher course. The

content of the courseware was commented as being good basic background material.

Another respondent suggested adding a bibliography. The bibliography page would allow the user to further pursue additional information. This suggestion was incorporated in the courseware.

### Learning Scenarios in the Classroom

The choice of a geology based lesson was based on the typical use of video and sound to demonstrate concrete concepts in Geology. Multimedia reinforces learning of content material with the use of audio, video and text. Caine, et al. (1994) recognize the different learning styles of students and recommends engaging as much of their senses as possible, which provides for deeper and richer learning experiences. The courseware has been designed to demonstrate multimedia use for the classroom. Volcano eruption footage of Mount Pinatubo in the Philippines was chosen as a sample lesson for use in the courseware. The video was produced by the Philippine Institute of Volcanology and Seismology (PHILVOCS) (1997) documenting the events that occurred before, during and after eruption of Mount Pinatubo in the Philippines. The video footage found in the courseware is about one minute edited version of the one hour original video production by PHILVOCS. The edited version was done using Adobe Premiere (Macromedia, Inc. 1994-98).

The multiculturalism scenario was included in the courseware to address diverse learning needs of California State University at San Bernardino (CSUSB) students. I believe that the CSUSB faculty who will use the courseware will find the content presented in this scenario to be helpful in assisting them in recognize specific learning needs of certain CSUSB minority students.

The third scenario which uses a technology based classroom project, was selected to enrich the skills of CSUSB faculty who are increasingly using this type of project in the classroom. This technology based project scenario discusses strategies on how to use a web based project in a collaborative environment. This scenario is a complementing activity to the first scenario, the Geology multimedia. The first scenario demonstrates the use of multimedia in addressing difficult concepts in Geology.

An alternative assessment is presented in the fourth scenario. Fischer and King (1995) note that standardized and norm referenced testing do not focus on how the student arrives at his or her responses. Authentic based assessment on the other hand, can use a rubric tool to evaluate the progress of development of the web based project in the third scenario. In my opinion, a rubric tool can be an alternative means of documenting the quality of learning that occurs during the process of doing a project. I believe that a rubric tool is an attempt to provide parallel focus on both the project output and the process and quality of learning that occurs. A sample rubric that is presented in this

scenario was developed to show how a teacher can focus on the student's progress and the expected learning output. The sample rubric is based on the web based project in the third scenario.

The last scenario discusses three critical thinking theories. These theories are presented to assist CSUSB faculty in increasing the quality of student and teacher discussions in the classroom.

### First Scenario

The courseware provides five scenarios that represent common classroom learning scenarios and activities. The first scenario deals with using multimedia technology for independent learning. A Geology class lesson about the eruption of Mount Pinatubo in the Philippines is created to illustrate the use of multimedia. The lesson explores Geology concepts of pyroclastic flows and volcanic eruptions. A QuickTime (Apple Computer, 1995-1998) video was developed to showcase these concepts in reality. In my opinion, footage of the eruption of Mount Pinatubo, area maps of the eruption and stills of the aftermath bring the student closer to the experience. The QuickTime video can be viewed in frames to focus on specific concepts and can be reviewed as many times as needed.

Geological terms are explained in a paragraph. The terms are highlighted in blue and are clickable. When the term is clicked on, another screen is shown to expound on the term. The blue highlight has been used

because it is commonly associated with web sites. It is hoped that the blue highlight will cue the user to click on the geological term.

## Second Scenario

The second classroom scenario involves learning differences found in multicultural students. California State University at San Bernardino (CSUSB) (1997) statistics show the diversity of the CSUSB student body being made up of large numbers of Hispanic and Caucasian students. Also, African-American and a few Native American students are also represented in the diversity mix.

The courseware will provide a cultural matrix which will guide the teacher in identifying learning needs that are culturally based. Instructional strategies and implications will help the teacher accommodate these learning needs in the classroom. Students identified in the matrix are identified as African-American, Hispanic and Native American in origin. The matrix covers cultural generalities. Specific cultures within each ethnicity will not be discussed.

Banks (1994) notes that Hispanic, native American and African American who are low income and a linguistic minority have different learning, cultural and motivational styles. These styles differ from the learning styles that are frequently addressed by the teachers in the schools.

Diamond & Moore (1995) note that the centrality of the family is very evident in Hispanic Culture. Achievement is sought within a context and for

the purpose of family and peer group solidarity and identification rather than for individual and independent attainment. Furthermore, Diamond & Moore conclude that that the unfamiliar teacher may draw the conclusion that family closeness is antithetical to the fostering of personal independence.

Banks (1994) relates that students who are Hispanic often learn better in a cooperative learning environment than when competitive teaching techniques are used. According to Kraus (1996) children who are Hispanic often respond negatively when placed in situations involving individual competition. Hispanic students can also work in team projects that present collaboration with their other peers. The teacher can confer individually with the students to discover their comfort zones and learning styles.

Banks (1994) recognizes that Native American students succeed when school rules and learning outcomes are made explicit. Diamond & Moore (1995) observed that the interactional patterns in the native American adult and child relationship is described as direct and honest. Native American adults speak to the child in the level of the adult language and include them in family conversations. The adult models living and survival tasks and expects the child to concentrate and respect the adult in the process.

Diamond & Moore (1995) note that Native American students are characterized as active listeners. Diamond & Moore view native Americans as valuing songs, chants and poems as these become passed on from one generation to another passing on the tribe's history.



Diamond & Moore (1995) describe African American culture as filled with oral forms of communication. These take in the form of music, rhymes, sermons, verbal play and call response patterns that transmit history, culture in traditional African tribes. Diamond & Moore note that these are evident in contemporary rap music and Black English wherein words are recorded within a purposeful context. While reading and writing are byproducts of powerful oral tradition, its context expounds on city life and gang life. Moreover, the role of teacher is to help the African American Student contextualize reading and writing as a meaningful response to oral and real-life experiences.

Banks (1994) emphasizes that teachers must be able to respect the languages and dialects that students bring to school. The student's first language and dialects can be used as vehicles for helping them learn standard English.

Lipman (1998) notes that teachers can function as cultural mediators as they help clarify their own ethnic and cultural identity and that of their students. For example, the teacher can guide cultural awareness and understanding of their students so that positive relationships can evolve. Diamond & Moore (1995) relate that dialogues should help teachers analyze their values and assumptions critically to minimize prejudices, stereotypes and misconceptions. Diamond & Moore view that cultural diversity can be recognized in the classroom if one culture does not dominate and supplant the cultural ideas of others.

Diamond & Moore (1995) note that teachers can help develop social contexts in a culturally diverse classroom. Hatcher (1997) adds that the culturally-diverse classroom could recognize that each student learns differently from another as a result of varying cultural backgrounds. In my opinion, the teacher can help foster opportunities for social interactions, collaborations and cooperation. Diamond & Moore report that culturally diverse students also construct their own meaning of knowledge as their heritage and background influence them. Lipman (1998) shares that consensus and stated that shared understanding encourages socialization and continued collaboration. Lipman proposes that caring environments may help lessen cultural misunderstandings, subordination of minority students and censure that contributes to the failure and alienation of minority students. Furthermore, sustained interaction between teachers and students will help facilitate empathy and trust across cultural, racial and class differences.

Banks (1994) recommends that teaching strategies should be interactive, personalized and cooperative. Lipman (1998) notes that the teacher's role is to listen and empower the students from different racial, cultural and gender groups.

### Third Scenario

In my view, technology-driven projects like web-based projects are appropriate for students to work collaboratively in groups. Grasha (1996)

notes that student groups should function autonomously. In my perspective, the teacher's role could be to facilitate the formation of the group and selection of a topic. Grasha notes that a strong teacher presence is not required for a group project. Hatcher (1997) relates students can be held responsible for the structure and quality of interactions with one another.

The third scenario is about the development of five web pages on a chosen volcanic eruption. The volcanic eruptions are limited from the periods of the 18th to the 20th century. An example of a volcanic eruption within this time frame is the eruption of Mount Saint Helens. The students in the class will be divided into groups of three members each. The group will be composed of a technical consultant, copywriter and a researcher.

The students are assigned real world roles in the work team. In my perspective, real world roles assign professional responsibilities that inspire confidence and interest in the students. Fischer and King (1995) recommend providing students with learning tasks that closely resemble real world scenarios. This scenario uses real world job functions and titles that allow the student to approximate the work experience of web publishing. The technical consultant is responsible for the HTML coding and scanning of graphics for the project. The copywriter is responsible for the development of the text structure and concepts. Lastly, the researcher is responsible for sourcing information, graphics and other relevant data for the project.

The project should cover the following in the development of the web pages. The volcanic timeline should be discussed in the web page. A glossary of volcanic terms should be included. The physical destruction caused by the volcanic eruption should be discussed. The work teams have the liberty in creatively constructing the presentation structure of the project. An on-line story can also be used as a presentation device.

The following learning scenario evaluates the learning process and outcomes of this project. A portfolio assessment would be a viable alternative to a teacher's traditional scoring of a group based project.

#### Fourth Scenario

Traditional classroom testing focuses on whether students get the correct answers. Fischer and King (1995) define authentic assessment as a variety of evaluation tools that examine the student's ability to solve problems or perform tasks that closely resemble authentic situations. Wiggins (1998) notes that authentic assessment replicates contexts in which adults are tested in the workplace, civic life and personal life. Wiggins relates that contexts could take the form of particular constraints, purposes and audiences.

The courseware will discuss the use of an authentic assessment tool. The purpose of using an authentic assessment tool is to involve the students with the assessment process. The assessment will involve using both self and peer assessment. The authentic assessment tool will be a rubric that shall be used to assign point values to the different components of the project.

In my opinion, point values guide teacher in assessing the level of performance in a particular project.

This scenario will include a rubric which will be a scoring device designed to assist the teacher and student in clarifying, communicating and assessing expectations and outcomes. Nilson (1996) considers listing the components of the project in developing a rubric. Value points can be assigned for each component of the project. The components could discuss organization, quality of data, clarity style and mechanics. The sample rubric is an attempt to assess learning outcomes in a group project. The third scenario is used as the thematic project for the Rubric.

#### Web-Based Project on a Volcanic Eruption

The learning goals of the sample project are:

- 1) Student will be able to construct a minimum of five web pages on a chosen volcanic eruption
- 2) Student will collaborate with other students.

The learning and performance rubric used is presented with a value scale to assess the over-all work of the student. The teacher, peer student and the student himself or herself rate the project and assign value points.

The value points are presented with descriptors. Wiggins (1998) recommends using descriptors that are sufficiently rich to enable student performers to verify their scores as well as accurately self-assess. Wiggins notes that the use of

indicators make descriptions less ambiguous by providing examples of what to recognize in each level of performance. This assessment will be part of the student's performance portfolio.

The sample rubric is shown on the next page. The teacher and the students assign points to each item in the learning and performance rubric from the descriptors provided below.

5 points

Work output is of excellent quality. Reflects full collaboration with other team members.

4 points

Work output is very good in quality. Outstanding cooperation with other team members was shown.

3 points

Work output shows satisfactory quality. Team members gave enough effort to finish project.

2 points

Work output shows hasty completion. Team members met and worked occasionally.

1 point

Work quality and output needs improvement. Team members worked independently.

Web Project Rubric

Self / Peer / Teacher

1) 5 Web Pages were constructed

2) Lay-out of web pages

3) Graphics and text were used

Self / Peer / Teacher

4) Audio clips were used

5) Video Clips were used

6) Links were made to other Geology web pages

7) Web pages reflect the content of the lesson

8) Member's participation in the project

9) Project was finished within deadline

10) Project contributed to gaining new skills in web publishing

A maximum of 5 points and a minimum of 1 point can be assigned by both students and teachers. Fischer and King (1995) note that an authentic system should be qualitative as well as quantitative. The authentic assessment focuses on the learning and development of the primary participants in the process namely, the teacher, and student. Wiggins (1998) relates that authentic assessment determines the student's ability to efficiently and effectively use a repertoire of knowledge and skills to complete a complex task. In my opinion, students would need to develop skills in evaluating their own work. Wiggins notes that self-evaluation skills include reflection,

judgment, refinement of one's work before, during and after the assessment process.

#### Fifth Scenario

College faculty may have faced a situation where they needed their students to think critically through a learning activity or discussion. Grasha (1996) notes Halpern (1989) proposed three characteristics of critical thinking. Critical thinking entails thought and reflection towards a focused goal. Critical thinking stresses our capacity to consider relevant information in arriving at a directed conclusion. Lastly, critical thinking strives to achieve a balance between two sides of an issue.

This learning scenario examines three modes of critical thinking. This should guide teachers in planning for critical thinking activities and discussions in class. Grasha (1996) discusses Perry (1970;1981) and Belenky (1986) in the identification of three modes of critical thinking. Dualism knowledge believes in information that is either right or wrong. Difficulty in thinking independently and analyzing information are characteristic of this mode. Multiplism knowledge allows the student to turn uncertainties, doubts and unknowns into diverse points of view. While the student considers multiple points of view, he or she may not benefit from a focused and consistent criteria to analyze them. Relativism knowledge recognizes that evidence is needed to support good perspectives. Students benefit from independent thinking while utilizing a benchmark to arrive at a conclusion.



## Creation of a Learning Philosophy

This part of the courseware will present three learning theories. The courseware will focus on constructivism, brain-based learning and problem-based Learning.

Grasha (1996) describes Constructivism as a process of learning wherein the learner adjusts one's mental models and schemas to accommodate new experiences. Gagne, et al. (1992) note that a schema organizes memory elements into a large set of meaningful information pertaining to a general concept. Gagne, et al. note that while the learner is exposed to the whole breadth of experience, reflection and insight play an important role in translating experiences into personal realms of understanding. Moreover, Rouet, et al. (1996) note that hypertext may prevent readers from using their own knowledge of typical presentation formats. In my view, the reader will then have to learn how to take advantage of hierarchical or direct links. Rouet, et al. emphasize that as a result, the learner is engaged and actively responsible for his or her own learning.

In my opinion, teachers should encourage creative and divergent thinking and responses. Grasha (1996) notes that a constructivist oriented teacher focuses on establishing new connections and understanding. Moreover, Caine, et al. (1994) relate that new connections can be developed using mental maps which provide a frame of reference wherein the student can find his or her own way to relate new information to other information.

Caine, et al. emphasize teachers should provide accommodations for different learning styles in the classroom. Similarly, classroom strategies should be flexible and sensitive to learning needs of the students.

In my opinion, students would benefit from a student to student dialogue. Grasha (1996) recommends tapping the individual expertise of the students. Students bring in a diverse set of experiences and knowledge to the classroom. Moreover, Caine, et al. (1994) note that understanding a concept is a result of perceiving relationships. Caine, et al. report that the teacher's role is to continually provide experiences in assisting students to make connections between two concepts. Banks (1994) relates that each student can contribute their own meaning based upon their own understanding and cultural background.

Grasha (1996) stresses the teacher's need to focus on developing and motivating creative thinking in students. Grasha emphasizes that students need to be exposed to a thinking structure that involves analyzing, interpreting and synthesizing information. Caine, et al. (1994) note that teachers should provide experiences in different learning scenarios as well as from different points of view. Barr and Tagg (1995) point out that when students have some understanding on how they learn, it helps them become involved and responsible in their own learning.

Brain-based learning is based upon an understanding of the structure and function of the human brain. Grasha (1996) notes that learning takes

place when the brain's natural thinking processes are not hindered from being utilized. Caine, et al. (1994) note brain-based teaching allows for the design and orchestration of lifelike, enriching, and appropriate experiences for learners. There seems to be overlaps that exist in Constructivism and Brain-based learning with how each theory treats the environment as an important factor in learning. Caine, et al. relate that both theories understand the importance of enriched environments in promoting connections in learning. Caine, et al. note that brain-based learning recognizes "genetically programmed development" as the child interacts with the environment. The growing brain makes new connections based on what the child experiences. In my opinion, Brain-based learning recognizes that instruction should be shaped towards the neurological capacities of the student's brain.

Constructivism, on the other hand, recognizes that the learning environment can be manipulated to bring about significant connections to the student's learning. Brain-based learning, considers brain physiology plays a crucial role in understanding the process of learning. In my view, real problems and settings outside the classroom also reinforce learning in the classroom. Moreover, Caine, et al. note that learning takes place within a multiplicity of contexts such as the classroom, school, community and country.

Caine, et al. (1994) relate that teachers can introduce creativity in the classroom and support the student's desire to learn. The focus of the instruction should be to encourage the student's desire to know more about

the subject. The setting of instructional goals and assessments should not act to limit the student's desire to learn. Gagne, et al. (1992) note that teachers should design instruction using human capabilities that have a cumulative nature. Gagne note that learning skills build upon one another that the teacher can develop accordingly.

Grasha (1996) finds that the learning environment plays a crucial role in harnessing the potentials of brain-based learning. Grasha considers feedback as effective when it is derived from reality. Concepts of erosion in the first scenario can be learned when a working model is constructed and demonstrated by the students. I believe that working model is superior to just being lectured by the teacher. In my opinion, the experience derived from this type of activity comes as closest to reality but in a safe environment. Caine, et al. (1994) consider feedback important from other individuals, using information that is available to contrast and compare themselves to others.

The faculty member is expected to construct a three (3) sentence learning philosophy based on the three (3) learning theories presented in this section. The learning philosophy can be customized to address learning needs and problems that occur in his or her classroom.

The learning philosophy statement should include:

- a) What type of learning theory am I currently using in my classroom? Feel free to add other learning theories not discussed.

b) What type of instructional strategies should I use to support the learning theory I used?

### Creation of a Teaching Philosophy

This section of the courseware is aimed at the user's development of a teaching philosophy. Several teaching theories will be presented. These theories include cognitive, humanistic and behavioral frameworks of teaching. Barr and Tagg (1995) note that cognitive-based theory views learners as active seekers of information and skills. The teacher is tasked to actively involve and engage the students. The teacher is concerned with the mental processes. Gagne, et al. (1992) notes that teachers should be concerned with the cognitive strategy that they wish to use. Cognitive strategies play an important role in how readily he or she learns, recalls, and how fluently he or she thinks.

Duff and Savery (1996) relate that humanistic-based theory views learners as possessing natural tendencies to achieving their potential in life. Teaching in a humanistic environment focuses less on technique and emphasizes transfer of morals and values to the student. The teacher is concerned with human relationships and interactions that occur in the classroom. Nilson (1996) relates that teachers should be concerned with making students learn rather than just doing something. Collaborative social skills such as listening actively, taking turns, compromising, and sharing resources are important in a humanistic environment.

Grasha (1996) believes that behavioral-based theory views learners as motivated by incentives and rewards. The teacher is concerned with the use of rewards and punishment. Nilson (1996) cautions that motivational incentives work most effectively in optimal rather than maximum doses. As more incentives are used, there will come a point where expected outcomes will diminish over a period of time. The motivation to learn is not fixed and varies from student to student. Grasha (1996) notes that teachers can use and control external rewards in a structured learning environment.

The courseware will present an overview of each theory alongside implications for motivating students and instructional strategies. The user of the courseware will be helped by this section to develop his or her own teaching philosophy. The teaching philosophy will be a four (4) sentence statement. Elements of the theories presented can be combined to construct the teaching philosophy.

#### Professional Teaching Plan

The culminating activity of the courseware will be the development of a professional teaching plan covering a period of five years. The user will be asked to give three professional development objectives, each accompanied by a corresponding strategy for achieving the objective. The user will also be asked to construct three service development objectives. These objectives should have a corresponding strategy for achieving each objective. Lastly, the

user will construct three teaching innovation objectives. Each objective will also have a corresponding strategy for the achievement of the objective.

### Design Implications

The process of developing the courseware's graphic user interface presented several design implications. It was helpful to have designed beforehand a flowchart of the content material. The flowchart allowed proper placement of navigation buttons which will enable the user to move from one screen to another. One respondent from the courseware's evaluation commented that it was easy to navigate around the courseware. A counter comment replied that it took a while to learn how to move around the courseware using the navigation buttons. The label on the navigation button could not be made larger for easier reading. One respondent had some difficulty reading the default typeface that Authorware uses for the navigation buttons. An option for a different typeface on the navigation button was not available.

In choosing the size of the typeface for the courseware, the resolution of the computer screen was not taken carefully into consideration. The respondents complained that it was difficult to read the text. The typeface size was then increased. It is hoped that the increase in font will assist the intended users in easily reading the text.

The respondents were not really concerned about the color contrast of the graphic user interface, although one comment suggested to use another

color for the background. The use of the white background and the black text in the courseware provides a similar contrast to that found in textbook materials. In my opinion, readability of the text should come as a first priority rather than aesthetics of the lay-out. The blue colored links acted as a cue for the user to click on. This was intended to imitate hypertext web links. Most of the respondents clicked on the blue links. Apparently, that the links were effective in prompting the user to pursue more information. From an instructional design perspective, a blue colored hypertextlink seems to be commonly recognized as a means of obtaining further information on a particular topic or term. It would be advantageous to the user of the courseware to have some familiarity with the hypertext links found in Internet websites. Other users who have less knowledge on Internet hypertext links, would benefit from some orientation on the hypertext links structure found in the courseware.



## CHAPTER 5

### Future Development

Another option for the choice in the courseware's medium is a web based site. A website would provide greater access to the content material regardless of whether the user's computer was Mac-based or PC-based. The website would allow the user to access the courseware from a world-wide web browser. Streaming video technology can be used to deliver QuickTime video in a web based format.

If financial resources were sufficient to purchase a full version of Authorware, more features could have possibly been included. The demonstration version used in the courseware allowed only (50) fifty icons in the design flowchart. More hypertext links and QuickTime videos could have been constructed to accommodate more information in a non-linear hierarchical structure. In Authorware's framework design each hypertext link, QuickTime video and navigation button is represented by one icon. The courseware used all fifty (50) icons provided in the demonstration version. Likewise, the full version allows the packaging of the courseware to create a stand-alone version for both Mac-based and PC-based computers.

I believe that the courseware has good potential in strengthening California State University at San Bernardino's (CSUSB) New Faculty Development training program. The courseware currently is not geared towards training new faculty for a specific discipline. Future versions of the

courseware can incorporate specific training geared towards specific needs of academic departments of CSUSB.

The courseware should not only be limited for the use of California State University at San Bernardino. Faculty from other California State University (CSU) campuses can only also benefit from the courseware it can serve as a prototype training tool for other CSU campuses to develop their own. Sharing of experiences documented in the use of this courseware can be shared in CSU teaching conferences as well as other professional teaching organizations.

## APPENDIX A

### Mac Zip Disk Copy of Courseware



## APPENDIX B

### Copyright Use Documents



Republic of the Philippines  
Department of Environment and Natural Resources  
Visayas Avenue, Diliman, Quezon City, 1100  
Tel. Nos. (632) 929-66-26 to 29 • (632) 929-62-52  
929-66-20 • 929-66-33 to 35  
929-70-41 to 43



Saviniano S. Perez III  
California State University  
San Bernardino

November 17, 1997

Dear Mr. Perez,

This is in response to your letter of November 14, 1997 requesting assistance from our office in the procurement of video materials for the production of multimedia CD Rom of Mt. Pinatubo eruption.

This office is giving its permission for the use of video materials on Mt. Pinatubo with your assurance that they would be used strictly for your Master's Project as a graduation requirement in Education at the California State University.

IRMA S. PAULME  
OIC Public Affairs Office  
Department of Environment and Natural Resources  
Visayas Ave. Q. City  
Metro Manila, Philippines

PHIVOLCS



Republic of the Philippines

Department of Science and Technology

**PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY**

PHIVOLCS Bldg., C.P. Garcia Ave., University of the Philippines Campus, Diliman, Quezon City

Tels. 926-2611; 426-1468 to 79 Fax: 929-8366

Office of the Director


13 November 1997

**Mr. SAVINIANO S. PEREZ, III**  
California State University  
San Bernardino

Dear Mr. PEREZ:

The Philippine Institute of Volcanology and Seismology is authorizing your use of video shoots and photographs of the events that occurred before, during and after the Mount Pinatubo eruption. It is understood that the Philippine Volcanology media materials are to be used for your Master's Project as a graduation requirement for a Master's degree in Education at California State University at San Bernardino.

Very truly yours,

  
**RAYMUNDO S. PUNONGBAYAN**  
Director

## APPENDIX C

### Questionnaire Sample Copy

## QUESTIONNAIRE

Researcher: Sam Perez

### Informed Consent

The project aims to develop a training courseware for new CSUSB faculty. The courseware makes available learning and teaching theories and strategies on a training on demand framework. Authorware has been utilized as this features hierarichal hypertext linking, quicktime video playback and logical graphic interface development. This prototype courseware could further be expanded to address specific teaching and learning needs of various departments.

The courseware will be evaluated using a mix of three students and two professors. The participants will be asked to view the courseware. The participant will be provided a questionnaire to evaluate the courseware. Participation in this research will not be more than one hour.

No background information will be collected from the participant. The participant has the right to withdraw their participation and their data from the study at any time without any penalty. The study does not anticipate any immediate or long-term risks and benefits from the participants involvement in the evaluation of the courseware.

This research questionnaire has been approved by the CSU San Bernardino Institutional Review Board.

### Instructions:

After viewing the courseware, please evaluate the courseware using the following items. Encircle the response that best reflects your answer.

### Graphic User Interface Design

- |   |        |                  |           |        |       |
|---|--------|------------------|-----------|--------|-------|
| 1. The screen design has color contrast.                | Always | Most of the time | Sometimes | Rarely | Never |
| 2. The typeface used in the courseware is easy to read. | Always | Most of the time | Sometimes | Rarely | Never |
| 3. I can navigate around the courseware.                | Always | Most of the time | Sometimes | Rarely | Never |
| 4. The menu buttons are easy to use.                    | Always | Most of the time | Sometimes | Rarely | Never |

### Training Objectives

- |   |        |                  |           |        |       |
|---|--------|------------------|-----------|--------|-------|
| 5. The training objectives are stated clearly | Always | Most of the time | Sometimes | Rarely | Never |
| 6. The training objectives are doable         | Always | Most of the time | Sometimes | Rarely | Never |



7. The training objectives address my teaching and learning needs	Always	Most of the time	Sometimes	Rarely	Never
8. The expected outcomes of the training are reasonable	Always	Most of the time	Sometimes	Rarely	Never
<b>Learning Scenarios</b>					
9. I can identify with the learning scenarios used	Always	Most of the time	Sometimes	Rarely	Never
10. The learning scenarios are insightful	Always	Most of the time	Sometimes	Rarely	Never
11. The learning scenarios are relevant	Always	Most of the time	Sometimes	Rarely	Never
12. The learning scenarios are easy to understand	Always	Most of the time	Sometimes	Rarely	Never
<b>Creation of a Learning Philosophy</b>					
13. I acquired new knowledge on how learning occurs	Always	Most of the time	Sometimes	Rarely	Never
14. The theories were easy to understand	Always	Most of the time	Sometimes	Rarely	Never
15. The theories presented were current	Always	Most of the time	Sometimes	Rarely	Never
16. The activity of this section was easy to do	Always	Most of the time	Sometimes	Rarely	Never

**Construction of a Teaching Philosophy**

17. The teaching theories presented are up to date	Always	Most of the time	Sometimes	Rarely	Never
18. The theories presented are broad in application	Always	Most of the time	Sometimes	Rarely	Never
19. The length of the activity was just right	Always	Most of the time	Sometimes	Rarely	Never
20. I can create my own teaching philosophy using this section	Always	Most of the time	Sometimes	Rarely	Never

**Professional Development Plan**

21. The examples presented were clear	Always	Most of the time	Sometimes	Rarely	Never
22. I can create my own plan using this section	Always	Most of the time	Sometimes	Rarely	Never
23. The length of the activity was just right	Always	Most of the time	Sometimes	Rarely	Never
24. The use of a matrix is appropriate for this activity	Always	Most of the time	Sometimes	Rarely	Never

25. Please comment on your over-all experience in using the courseware.

26. What improvements would you recommend for the courseware?

27. Other comments you may wish to include.

This study is being conducted to evaluate the design of the graphic user interface of the courseware. The results of this study can be viewed in the final version of this thesis manuscript in the Pfau Library. For questions, the researcher can be reached at 714-995-7126.

## APPENDIX D

### Courseware Screen Shots

## Main Options

Training Objectives

Learning Scenarios

Learning Philosophy

Teaching Philosophy

Teaching Plan

## Content Options

# CSUSB New Faculty Development Courseware

### Objectives of the Training

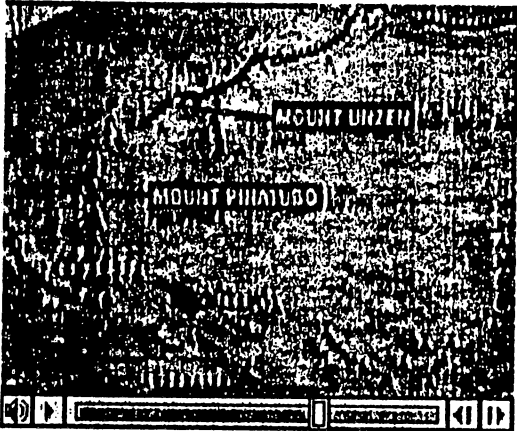
- 1) Serve as a refresher course for learning theories and instructional strategies
- 2) Orient new faculty on current technology-based instruction
- 3) Reflect one's teaching and learning philosophy

### Features of the Courseware

- 1) Training on demand - user determines time, pace and venue of the training
- 2) Hierarchical Hypertext- user chooses path through multiple screens of information
- 3) Constructivist Approach - user is expected to participate in the construction of teaching and learning philosophy

### Expected Outcomes of the Courseware

- 1) The creation of a brief teaching and learning philosophy
- 2) The development of a 5 (five) year teaching plan

<b>CSUSB New Faculty Development Courseware</b>	
<p><b>Main Options</b></p> <p>Training Objectives</p> <p>Learning Scenarios</p> <p>Learning Philosophy</p> <p>Teaching Philosophy</p> <p>Teaching Plan</p>	<p><b>Sample Multimedia Lesson</b></p>  <p><b>Quaternary</b></p> <p>Sedimentary deposits of the second period of the Cenozoic Era.</p> <p><b>EXIT</b></p>
<p><b>Content Options</b></p> <p>Multimedia</p> <p>Multicultural</p> <p>Web Project</p> <p>Assessment</p> <p>Thinking Tips</p>	<p><b>Pinatubo Geological Facts</b></p> <p>Pinatubo Volcano is one of the 21 active volcanos in the Philippines straddling the boundaries of three Central Luzon provinces- Pampanga, Zambales and Tarlac.</p> <p>Pinatubo Volcano is a part of the chain of volcanoes which borders the western side of Luzon and lies in the central portion of the Zambales Range. This mountain belt extends 160 miles from Lingayen Gulf in the north to Bataan in the south. Pinatubo Volcano towers to about 1,745 meters above sea level. This compound volcano is characterized by a complex of vents at their craters and flanks.</p> <p><b>Quaternary</b> andesitic-dacitic volcanic deposits, referred to as Pinatubo Volcanics, comprise Pinatubo Volcano and adjoining peaks. They occur as mostly ash fall and <b>pyroclastic flow</b> deposits which appear to have originated from several vents near the peak of Pinatubo</p>

# CSUSB New Faculty Development Courseware

- Main Options
- Training Objectives
- Learning Scenarios
- Learning Philosophy
- Teaching Philosophy
- Teaching Plan

- Content Options
- Multimedia
- Multicultural
- Web Project
- Assessment
- Thinking Tips

## Multicultural Students in the Classroom

Classroom learning differences  
African-American Students

Diamond & Moore (1995) describes African American culture as filled with oral forms of communication. These take in the form of music, rhymes, sermons, verbal play and call response patterns that transmit history, culture in traditional African tribes. These are evident in contemporary rap music and Black English wherein words are recorded within a purposeful context. While

Hispanic Students

Banks (1994) relates that students who are Hispanic often learn better in a cooperative learning environment than when competitive teaching techniques are used. According to Kraus (1996) children who are Hispanic

What is your role as a teacher

## Teacher's Role

Lipman (1998) proposes that caring environments may help lessen cultural misunderstandings, subordination of minority students and censure that contributes to the failure and alienation of minority students. Sustained interaction between teachers and students will help facilitate empathy and trust across cultural, racial and class differences.

Main Options

Training Objectives

Learning Scenarios

Learning Philosophy

Teaching Philosophy

Teaching Plans

Content Options

Theories

Philosophy

CSUSB New Faculty Development Courseware

Theory

- Constructivism ←
- Brain-Based Learning
- Problem-Based Learning

Grasha (1996) describes Constructivism as a process of learning wherein the learner adjusts one's mental models and schemas to accommodate new experiences. Gagne et al. (1992) notes that a schema organizes memory elements into a large set of meaningful information pertaining to a general concept. While the learner is exposed to the whole breadth of experience, reflection and insight play an important role in translating experiences into our own realms of understanding. For example, Rouet et al. (1996) notes that hypertext may prevent readers from using their knowledge of typical presentation

Who is the student that benefits?

The Independent Student

Grasha (1996) defines these students as being able to think for themselves and confident in their learning abilities. The student selects the content of the material they feel would be relevant to their own experience. These students prefer to work in solitary than work in groups.

Classroom Strategies



## Main Options

Training Objectives

Learning Scenario

Teaching Philosophy

Teaching Philosophy

Writing Philosophy

## Content Options

Multimedia

Multicultural

Web Project

Assessment

Thinking Tips

# CSUSB New Faculty Development Courseware

## Critical Thinking

College faculty may have faced a situation where they needed their students to think critically through a learning activity or discussion. Grasha (1996) notes Halpern (1989) proposed three characteristics of critical thinking. Critical thinking entails thought and reflection towards a focused goal. Critical thinking stresses our capacity to consider relevant information in arriving at a directed conclusion. Lastly, critical thinking strives a balance between two sides of an issue.

This learning scenario examines three modes of critical thinking. This should guide teachers in planning for critical thinking activities and discussions in class.

Grasha (1996) discusses Perry (1970;1981) and Belenky (1986) in the identification of three modes of critical thinking. Dualism knowledge believes in information that is either right or wrong. Difficulty in thinking independently and analyzing information is

**CSUSB New Faculty Development Courseware**

**Main Options**

- Training Objectives
- Learning Scenarios
- Learning Philosophy
- Teaching Philosophy** ←
- Teaching Plan

**Content Options**

- Cognitive Style** ←
- Behavioral Style
- Humanistic Style
- Creation of Teach

**Cognitive Style**

The teacher is concerned with the mental processes. Gagne et al. (1992) notes that teachers should be concerned with the cognitive strategy that they wish to use. Cognitive strategies play an important role in how readily he or she learns, recalls, and how fluently he or she thinks. Grasha (1996) describes two teaching styles that can teachers can be adapt in the classroom.

Expert

The teacher possesses knowledge and expertise that students need. The teacher maintains status as an expert by showing competence in detailed content of the course material. Students are challenged to enhance their competence. The teacher is primarily concerned with the information, knowledge and skills that students should learn and well prepared. |

**Main Options**

**Training Objectives**

**Learning Scenarios**

**Learning Philosophy**

**Teaching Philosophy**

**Teaching Plan** ←

**Content Options**

**Professional** ←

**Service**

**Research**

**CSUSB New Faculty Development Courseware**

**Professional**

**Directions:**

Create a five year professional plan incorporating at least two objectives. Each objective must include a corresponding strategy for each objective. A target completion date must also be included. Professional objectives include career, continuing post-graduate education, and presentation in major conferences. An example is provided below.

Objective	Strategy	Target Date of Completion
Finish PhD degree in UC Riverside.	Obtain PhD Fellowship through Department.	June 2002

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