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Active Learning Handbook

Institute for Excellence in Teaching and Learning

Faculty Development Center

Acknowledgments

Active Learning Handbook

Institute for Excellence in Teaching and Learning /
Faculty Development Center
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ACTIVE LEARNING HANDBOOK

Introduction

Many educators today agree that students learn more in an active learning environment than they do in a passive learning environment. The Active Learning Handbook is designed in to help faculty incorporate an active learning environment into their classrooms. The handbook provides information relative to the selection, evaluation and categorization of active learning strategies.

One of the most common methods for creating courses and learning exercises is content driven development where faculty divide content into sections to be covered over the span of the course and then creates presentations, lectures, and activities designed to introduce students to content. A frequent problem with content centered creation is that it does not take in to consideration situational factors (what and how students learn), and the multiple learning styles of students. A second approach is a "Systematic Learning–Centered Design" model. According to Fink (2003), this model is based on the concept that what and how students should learn is at the heart of creating significant learning, and that through the utilization of systematic tools to develop solutions to these questions, one can implement a pedagogically sound method of creating learning activities.

What is active learning?

Active Learning is a process wherein students are actively engaged in building understanding of facts, ideas, and skills through the completion of instructor directed tasks and activities. It is any type of activity that gets students involved in the learning process.

Active learning lexicons

Active Learning research exists in multiple disciplines including education, cognitive

science, and psychology. Many disciplines utilize different terminology to describe essentially

the same process, which can add to confusion when selecting and implementing an active

learning strategy. These differences can be attributed to the disciplines they were promulgated

from or the organization that they emanated from. Table 1 contains some examples of different

learning activities that closely resemble or are inclusive with active learning but are referenced

under different titles. Essentially, all of these activities are student centered and require the

learner to be actively involved in the construction of knowledge or the building of understanding.

Table 1: Active Learning Lexicons

Pedagogical Activity	Similarities with Active Learning
Student Centered Learning	Students are actively engaged in the creation of knowledge. Focused on things that are important to the learners.(Adams & Burns, 1999)
Collaborative Learning (Team, Peer, or Group Learning)	Individuals work together to solve a mutual problem. Each student must actively contribute to the group.
Engaged Learning	Getting students actively involved in their own learning and establishing a connection between the learner and the learning object (Carey & Bowen, 2000).
Participatory Learning	Often interchangeable with Active Learning but often infers internships or working with communities. It also presupposes specific knowledge that they will share with others in the learning process (Kane, L., 2001).

How this book is organized

The Active Learning Handbook consists of ideas, techniques, and examples that faculty

can use when creating significant teaching and learning activities. The handbook is divided into

two main sections: an introduction and a list of activities that can be incorporated into courses or

exercises. The introduction includes a definition of active learning, an overview of theoretical

frameworks, some selection strategies, and additional suggestions for using the book. In the

second section of the Handbook we have identified a series of learning activities, each of which includes a suggestion for where the activity falls on the four active learning continuums explained below, a description, purpose, implementation steps, additional information, and examples where possible.

Instructors can use this handbook to select the most appropriate active learning strategy by matching their learning objectives, their teaching experience and style, their learners' characteristics, and their desired level of interaction with the strategies listed in second half of this Handbook.

Theoretical Framework

It is important to understand the theoretical framework that active learning techniques are built upon. The two primary theories that have been commonly used to describe teaching and learning processes during the last half century are "Information Processing" or "Objectivism," which is often referred to as "traditional teacher-centered instruction," and "Constructivism," which is often referred to as "student-centered instruction."

Objectivists define learning as a change in the learner's behavior or in the learner's cognitive structure. Objectivists hold that there is one true reality and knowledge is the learner's exact reflection of that reality (Vrasidas, 2000). The belief is that effective instruction occurs when the teacher transfers objective knowledge to the learner. For example, a classroom lecture can be an effective teaching method when the instructor accurately feeds the information to the students. While these kinds of traditional forms of teaching are sometimes effective, research has shown undoubtedly that when students are actively involved rather that passively listening they learn more effectively.

Constructivism was founded on cognitive psychology, social psychology, extensive

research in education, and neurological science. The biggest impact that Constructivism has had on education is that it moved the focus of learning from the teacher to the student (Adams & Burns, 1999). In the Constructivist theory, learning occurs when students become engaged in an activity that utilizes the content and skill they are learning. Any new information introduced during the activity that is consistent with current knowledge and understanding is assimilated easily. Any new information that is not consistent with past experiences and understanding is either rejected as being wrong or is built into new knowledge. New knowledge is constructed when students combine new information with existing knowledge through the process of reflection (Adams & Burns, 1999).

Selection Strategies

Choosing the appropriate learning strategy is vital for successful student learning to occur. The typical method for selecting an appropriate strategy has been through the use of common sense based on teaching experience or by adapting what has worked for others. Some instructors consult research on "Best Practices" or content resources such as the Multimedia Educational Resource for Learning and Online Teaching (Merlot). While these methods work sometimes, a systematic method for activity selection would be advantageous.

<u>Taxonomies</u>

A common method of designing instruction today is built using "Blooms Taxonomy," which focuses on the creation of learning objectives and then designing instruction based on meeting these objectives. Although Bloom's group in fact generated three taxonomies (cognitive, affective, and psychomotor), Instructional Designers have most frequently referred to the one in the cognitive domain. The cognitive taxonomy consists of six kinds of learning that are arranged in a hierarchical sequence. These are, from the highest to the lowest (Bloom, 1956):

1. Evaluation

2. Synthesis

3. Analysis

4. Application

5. Comprehension

6. Knowledge (meaning "recall" knowledge)

This taxonomy has been used both as a framework for formulating course objectives and as a basis for evaluating student learning. While this method has become somewhat effective, individuals and organizations involved in higher education have expressed a need for different types of learning that are not represented in Bloom taxonomy. For example, learning how to learn, adapting to change, leadership, interpersonal skills, communication skills, character, tolerance, and others. These types of learning go beyond the cognitive domain of Bloom's taxonomy and suggest the need for broader taxonomy of significant learning (Fink, 2003).

Significant Learning Taxonomy

The Taxonomy of Significant Learning, developed by L.D. Fink, is based on the idea that all forms of learning require that the learner experience some kind of change. Fink states that without change there is no learning. For lasting change to occur there needs to be a significant connection or high level of importance to the learner's life. The more significant an activity is to the learner, the greater the change, the greater the change, the greater amount of learning that occurs.

Based of this perspective, Fink created a taxonomy learning that contains 6 categories of significant learning values or goals. Each of these categories contains more specific learning values that are all important to the learner (Fink, 2003).

The Taxonomy of Significant Learning
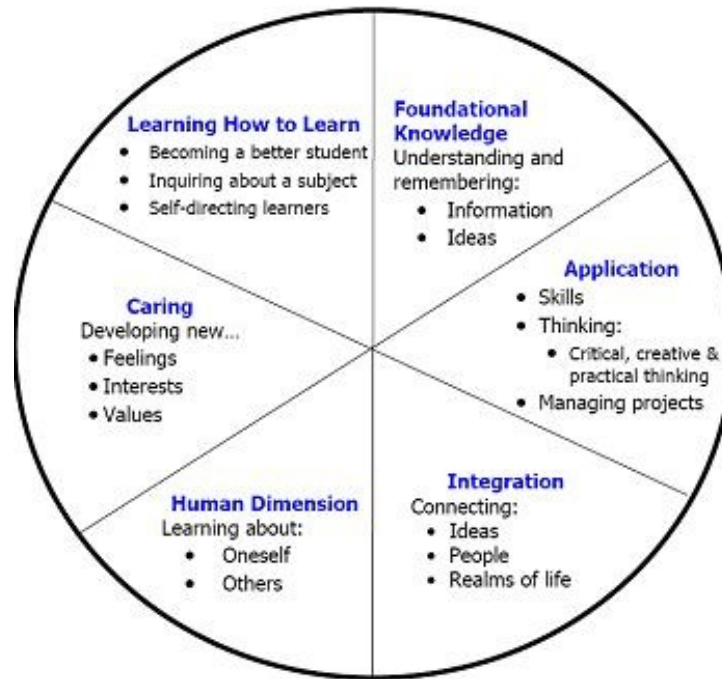
Significant Learning Value Categories

1. Foundational Knowledge: The basics, what students bring to the table

   Application: Doing, can be playing the piano, managing a complex task

2. Integration: When students are able to see and understand the connections between different things, an important kind of learning has occurred

3. Human Dimension: Relates the learning to the learner. This kind of learning informs students about the human significance of what they are learning

4. Caring: When students care about something, they then have the energy they need for learning more about it and making it a part of their lives. Without the energy for learning, nothing significant happens.

5. Learning How to Learn: This kind of learning enables students to continue learning in the future and to do so with greater effectiveness.

Individual learning styles are important in Fink's taxonomy. Each learning value can address multiple learning styles. Fink stresses that these learning values do not exist alone and that they are typically synergetic with each other. When faculty create activities that incorporate multiple learning values they in turn are influencing multiple learning styles. This becomes important when it is realized that classes are made up of learners with different learning styles. While it would be difficult to develop exercises after inventorying the variety of learning styles that a particular class processes it is important to try and address as many different learning styles as possible. This is accomplished by creating learning activities that incorporate different values - which in turn will impact multiple learning styles. The more types of learning the teacher can promote the greater the potential is for creating a deeper change in the learner.

Active Learning Continuums

One method of selecting appropriate activities is to categorize them using a series of continuums. The Active Learning Continuum framework was developed by Tracy Sutherland and Charles Bonwell (Bonwell & Sutherland, 1996). Bonwell and Sutherland detail the use of four continuums to measure variables associated with the process of selecting an appropriate activity. The continuums are:

1. Task Complexity Continuum

2. Course Objectives Continuum

3. Classroom Interaction Continuum

4. Continuum of Student Experiences

Task Complexity Continuum

The Task Complexity Continuum examines a particular active learning strategy to determine its complexity. The continuum ranges from simple to complex. Activities that take a

short amount of time require minimal instructions and are considered by students as being easy would lie on the Simple side of the continuum. Activities that contain many steps, take a great deal of time, and require detailed instructions lie on the Complex side of the continuum.

The Task Complexity Continuum

Simple   Complex
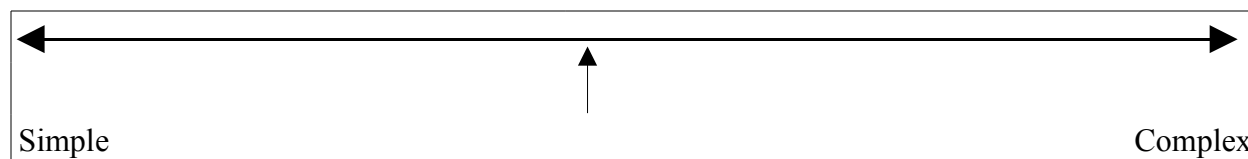
One example of a *Simple Task* that is included in this handbook is "The 1 Minute Paper", wherein the teacher asks students to write for one minute on a topic. The papers are collected and can be used for a variety of purposes, such as to check for understanding, gain student attention, poll students, and even take attendance. Another example is the "Lecture Note Sharing" activity wherein the teacher pauses every 7 to 10 minutes and has the students compare their notes with someone sitting next to them for accuracy and content.

An example of a *Complex Task* included in this handbook is the "Treasure Hunt", which is a learning activity that requires students search for a series of clues that lead to the discovery of new information. This activity requires a substantial amount of time for both preparation and execution and. participants must follow many steps to complete.

Course Objective Continuum

The Course Objective Continuum places knowledge and skill/attitudes at opposite ends of the continuum. Bonwell and Sutherland consider the question of whether the outcome sought is for the student to acquire knowledge, a skill, attitude, or some combination, to be the most important question that must be answered before the selection of an active learning strategy. The

answer to this question determines where on the continuum the course goals or objectives lay.

The Course Objective Continuum

Acquisition of Knowledge   Acquisition of Skill/Attitude
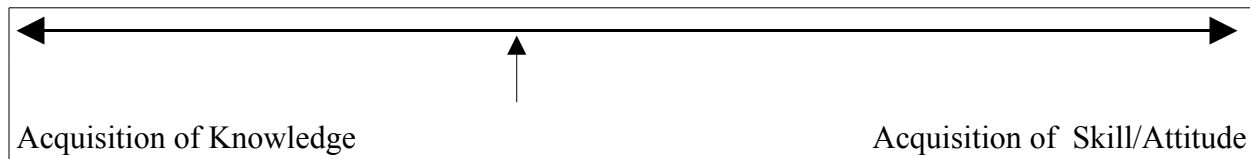
Whether the objective is for the acquisition of knowledge, skill, attitude, or some combination of the three, is an important question since there are different strategies for teaching a skill than there are when teaching knowledge. For example, an acting professor who wants students to learn how to display different emotions could utilize role playing exercises to help student master that skill.

Classroom Interaction Continuum

This reflects the overall level of interaction that an instructor prefers or is comfortable with. The two extremes are Limited Interaction on the left side of the continuum and Extensive Interaction on the right side of the continuum. An instructor's teaching style, willingness to change, and personality characteristics all impact his/her comfort level with using interactive strategies.

This continuum helps instructors match an active learning strategy with the appropriate level of interaction. Instructors that are uncomfortable with extensive interaction might select activities where the interaction is limited. Conversely, instructors who are very comfortable can select activities that incorporate extensive interaction. In addition, instructors who possess extroverted or outgoing personalities may prefer more interactively than an instructor with a more introverted personality.

Classroom Interaction Continuum

Limited Interaction   Extensive Interaction
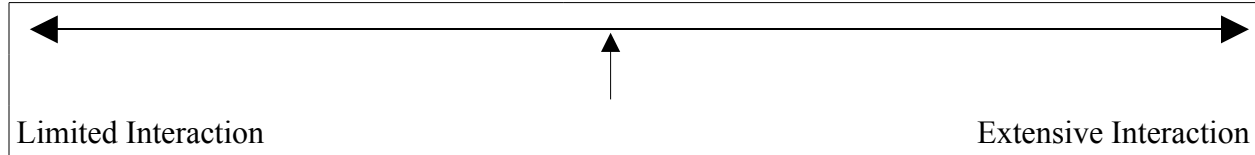
The level of interactively an instructor prefers does not reflect on his/her ability as a teacher and one level is not necessarily better than the other. It is important, though, that the strategy match the teacher's style. Trying to teach using a style that is uncomfortable or not appropriate increases the risk of the active learning strategy failing.

Student Experience Continuum

The last continuum measures the learners' experience with the teaching style, content, or skills needed to successfully participate in the active learning strategy. For example, students who are very familiar with the course content of third year French would be able to participate in activities that require an extensive French vocabulary while first year students would not be able to participate in the same activity.

Level of Student Experience Continuum

Inexperienced   Experienced
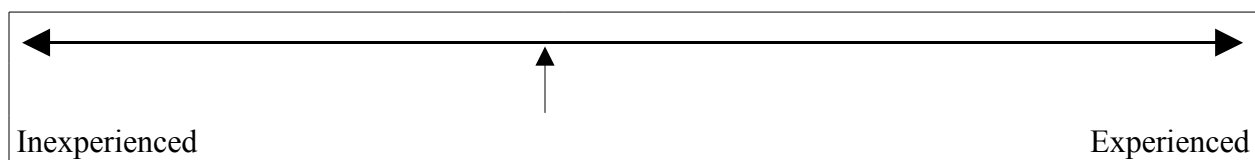
Similarly, the amount of comfort students have with participating in the strategy itself is a major factor in the success of active learning strategies. Students who feel uncomfortable with participating in the strategy or are even nervous performing part of the activity will have trouble communicating with the teacher and other students making the entire active learning strategy

ineffective. On the other hand, students who are very comfortable participating in the activities involved in the strategy can focus on what the instructor wants them to understand making the active learning strategy effective.

Using the Handbook

According to Bonwell and Sutherland, the four active learning continuums are intended to generate questions that stimulate instructors to select the types of active learning strategies that match their teaching styles, course goals, and student characteristics. Once these questions are answered the instructor then selects an activity that best fits the responses to these questions.

The second half of this handbook contains active learning strategies that faculty can choose from. Each strategy contains an indicator of where this activity falls on each of the four continuums. To select an activity for a course follow these steps:

1. Determine the course's profiles (or the profiles of a specific objective) on the four continuums.

2. Compare those profiles with the profiles given for each activity in the Active Learning Handbook.

3. Identify the activities that match the course/objective profiles.

For example, an instructor planning to teach an upper level language course is looking for an active learning strategy to implement in a course that contains the following characteristics; 1) the students in this course are very comfortable participating in authentic exercises, 2) the teacher is comfortable with extensive interaction with students, and 3) the instructor wants students to learn the language skills to function in a cultural situation.

To find the appropriate active learning strategy the instructor would first look for an activity that is complex, could be used to teach a skill, has extensive interaction, and that can be
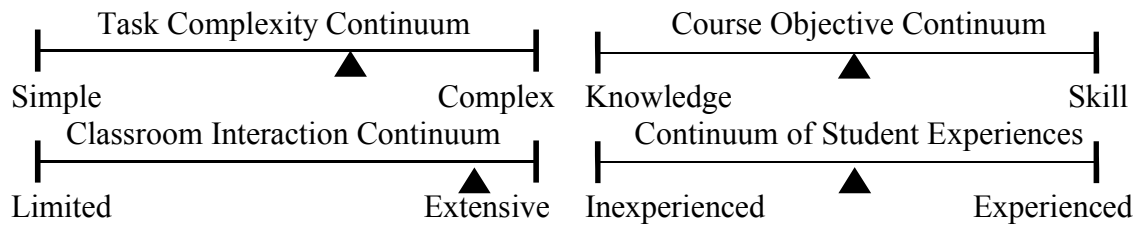
used in a situation where students are advanced in their discipline. There are several strategies that would match this profile, such as Role Playing, giving the instructor several options. The final step would be for the instructor to examine the Role Playing strategy to gain insights, resources, and guidelines to implementing the activity.

The Active Learning Handbook provides a description, purpose, implementation steps, and additional resources for each activity to help instructors utilize them in their own courses. When possible, the information is provided in a format that is not content specific, making it easier to use the strategies in a variety of situations.

Some examples do use specific content in an effort to make it easier to follow the implementation steps, but the instructor should be able to adapt the strategy to fit their content. Additional resources are provided that demonstrate how the active learning strategy could be used in additional content areas. Readers may need to translate the steps and resources to match their situations. For additional information please contact the Webster University Faculty Development Center.

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Activity Name: *Academic Portfolios*

Task Complexity Continuum		Course Objective Continuum	
Simple	Complex	Knowledge	Skill
Classroom Interaction Continuum		Continuum of Student Experiences	
Limited	Extensive	Inexperienced	Experienced

Activity Description:

David Sweet provided a good description of Academic Portfolios in "The Consumer Guide," (http://www.ed.gov/pubs/OR/ConsumerGuides/classuse.html) produced by the Office of Research, Office of Educational Research and Improvement (OERI) of the U.S. Department of Education: "Portfolios were initially used in the visual arts or fine art fields. Currently, portfolios are being used to showcase student accomplishments in many different subject areas and are often called Academic Portfolios."

Academic Portfolios provide a flexible instruction and assessment tool that both students and faculty are finding more desirable that traditional assessment models and since these portfolios are derived from student assignments and work it is a method that works at almost all levels of education." To be more specific, academic portfolios are an effective method for many subject areas in addition to the arts due to the recent emphasis on authentic assessment.

Authentic assessment involves measuring student achievement based on their performing content related tasks. Portfolios can be adapted to work in fields where projects are not showcased using multimedia to copy student output. For example, if students are giving oral presentations video tape could be used to record the session and assembled as part of a portfolio. Using portfolios to measure student performance helps students to gain a better sense of achievement when they can see their work over the course of the term and compare where they started with where they finished. Portfolios give students ownership of there work which improves their level of interest in what they are producing.

Activity Purpose:
1) Track student development
2) Reveals learning progress
3) Highlights best work
4) Connects students to work
5) Involves students in assessment process

Implementation Steps:
1) Ask students to collect their work during the term.
2) Ask students to identify criteria that they would use to evaluate each others portfolios.
3) Have them select what they want to include in their portfolios.

4) Ask students to reflect on their work and add additional content, including specifications, purpose, outcomes, and other related information.

Additional Information:
Steps faculty can take to help students create successful portfolios:

1) Faculty should determine parameters for student portfolios. An example of a portfolio will help students better understand what is expected.

2) Faculty should determine acceptable formats for the portfolios to be stored in. For example, images could be stored as prints and placed in a book, or stored as slides and put in a slide projector, or they could be stored digitally and viewed on a screen or digital projector.

3) Students should have access to the technology that would be needed to create portfolios.

4) Tell students they will be presenting their portfolio to the class when they are finished compiling their work.

The "Student Portfolio" site at Elon University (http://www.elon.edu/students/portfolio/what.htm) provides some excellent information regarding the use of portfolios.

Activity Name: *Assigning Roles During a Lecture or Video*

Task Complexity Continuum

Simple ▲ Complex

Classroom Interaction Continuum

Limited ▲ Extensive

Course Objective Continuum

Knowledge ▲ Skill

Continuum of Student Experiences

Inexperienced ▲ Experienced
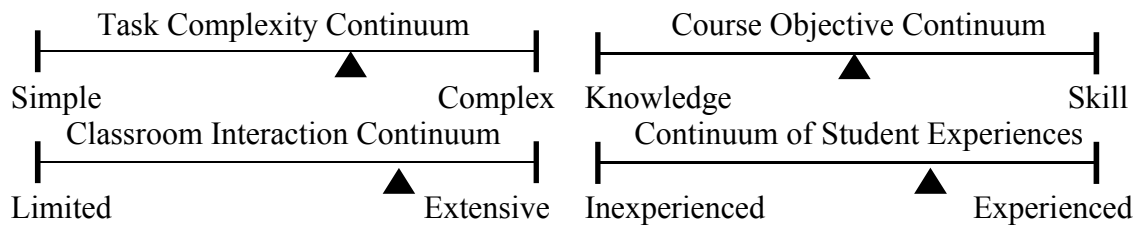
Activity Description:
Assign specific roles to each student during a lecture or video: critic, proponent, summarizer, and application.

Activity Purpose:
Allows students to look for certain aspects within a film or lecture and yet get information regarding other aspects from classmates.

Implementation Steps:
1) Place students into groups of 4, assign roles, and give each group 4 different colored pieces of paper corresponding to the different roles.
2) When the video or lecture is over, place all the students with the same color paper into one group to make 4 large groups.
3) Give the students within the color groups time to discuss what they noted in the video or lecture.
4) Place the students back in their original group.
5) Now the groups can discuss the findings of each person in the group.
6) If time permits, students can change roles.

Additional Information:
Critic must identify 3 things the video or lecture could have considered to make the argument more balanced; Proponent must identify 3 specific points illustrated in the video or lecture that supported the main message; Summarizer must tell what the primary message is and list examples; Application person must explain one way the material in the video has a direct impact on your life.

Activity Name: *Debate as a Learning Activity*

Task Complexity Continuum

Simple   Complex

Course Objective Continuum

Knowledge   Skill

Classroom Interaction Continuum

Limited   Extensive

Continuum of Student Experiences

Inexperienced   Experienced
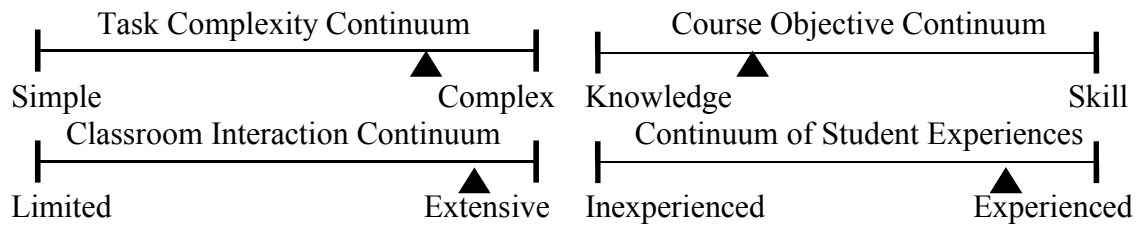
Activity Description:
Students assume roles opposite to those they hold personally to discover the complexity in big issues.

Activity Purpose:
Requires students to acknowledge opposite viewpoints, develops listening skills, demonstrates need for supporting evidence, encourages research and investigation, discourages simplistic approach to complex issues.

Implementation Steps:
1) Ask students to take a point of view on a specific issue related to the class discussion.

2) Give them 5 minutes to write down that point of view on a piece of paper and their reasons for holding the position.

3) Then ask the students to assume the opposite point of view and do research on it in preparation for a debate.

4) Following the Lincoln/Douglas style of debate, ask students to pair up with someone holding a position opposite their researched one and debate the issue one-on-one.

5) The debate should last about 20 minutes (each speaks for 5 minutes, and then each has 5 minutes to respond).

Additional Information:
Debate can help at the beginning of a unit on a controversial subject, in the midst of a discussion about a complex topic when students tend toward simplistic treatment, when there are strong opposing opinions on issues of importance.

Reference: "Teaching Creatively: Ideas in Action", Morrison-Shetlar & Marwitz, 2001.

Activity Name: *The Fish Bowl*

Task Complexity Continuum

Simple ▲ Complex

Course Objective Continuum

Knowledge ▲ Skill

Classroom Interaction Continuum

Limited ▲ Extensive

Continuum of Student Experiences

Inexperienced ▲ Experienced
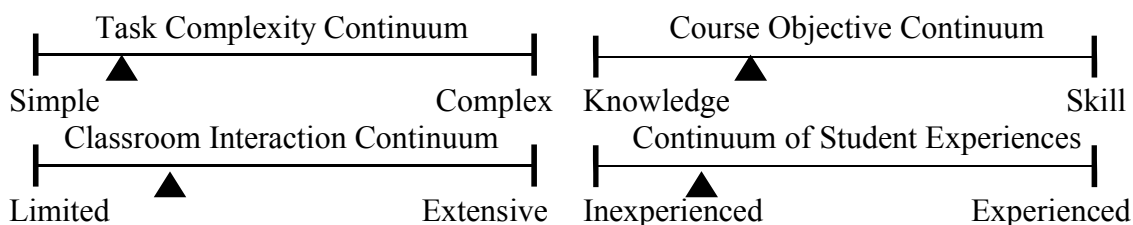
Activity Description:
Students write down one question concerning the course material and deposit their questions in a fish bowl. The instructor then draws several questions out of the bowl and answers them for the class or asks the class to answer them.

Activity Purpose:
To give the instructor feedback; gives the students the opportunity to ask questions, get clarification.

Implementation Steps:
1) Students are given index cards, and asked to write down one question concerning the course material. They should be directed to ask a question of clarification regarding some aspect of the material which they do not fully understand; or, perhaps you may allow questions concerning the application of course material to practical contexts.

2) At the end of the class period (or, at the beginning of the next class meeting if the question is assigned for homework), students deposit their questions in a fish bowl.

3) The instructor then draws several questions out of the bowl and answers them for the class or asks the class to answer them.

Additional Information:
Examples can be viewed at Fish Bowl example (http://www.calstatela.edu/dept/chem/chem2/Active/).

Activity Name: *Focused Student Journals*

Task Complexity Continuum	Course Objective Continuum
Simple ▲ Complex	Knowledge ▲ Skill
Classroom Interaction Continuum	Continuum of Student Experiences
Limited ▲ Extensive	Inexperienced ▲ Experienced
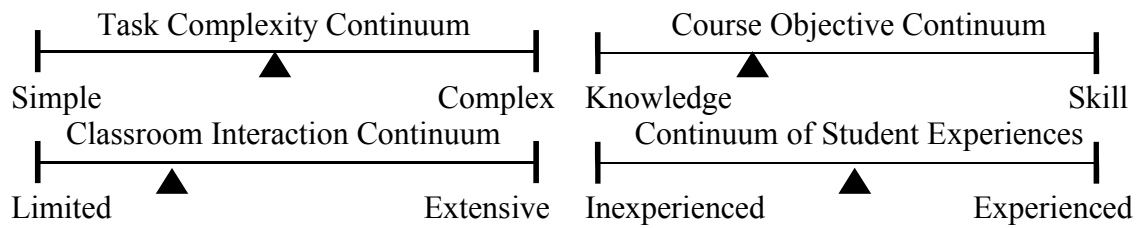
Activity Description:
Journals can take on many forms and be done for a variety of reasons. This learning activity utilizes Focused Student Journals to answer particular questions or topics. Teachers provide questions, topics or concepts that students focus their attention on when working on their journals.

Activity Purpose:
Allows for more in-depth discussion of or reaction to course material. Keep a journal forces students to think about the material in greater detail. Using specific questions that students answer in their journals provides a good opportunity to integrate what they are being taught into other areas.

Implementation Steps:
You may set aside class time for students to complete their journal entries, or assign this as homework.
1) During class or for homework, ask a question relating to the material.

2) Students' answers should be recorded in their journals.

Additional Information:
With this approach (particularly if entries are assigned for homework), you may ask more complex questions, such as, "Do you think that determinism is correct, or that humans have free will? Explain your answer.", or "Do you think that Dr. Kevorkian's actions are morally right? What would John Stuart Mill say?" and so on. Or you might have students find and discuss reports of scientific studies in popular media on topics relevant to course material, such as global warming, the ozone layer, and so forth.

Activity Name: *Lecture Bingo*

Task Complexity Continuum	Course Objective Continuum
Simple ▲ Complex	Knowledge ▲ Skill
Classroom Interaction Continuum	Continuum of Student Experiences
Limited ▲ Extensive	Inexperienced ▲ Experienced
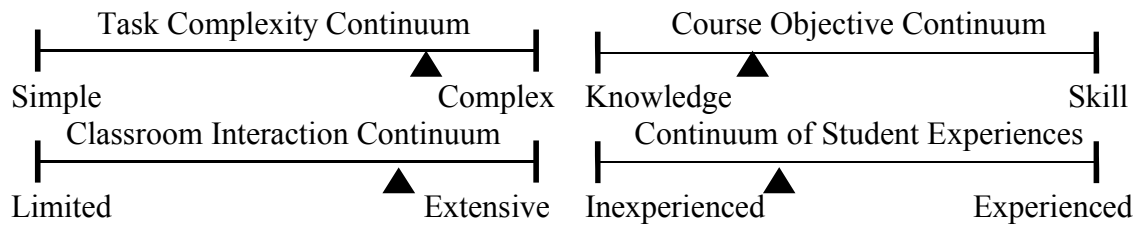
Activity Description: Lecture Bingo makes a game of identifying important points in a lecture. Faculty create a variety of cards that have different lecture points in each of nine squares. Students participate by marking boxes when they are brought up during the lecture.

Activity Purpose:
Lecture Bingo is a fun way to ensure students are "actively listening" and participating in a lecture.

Implementation Steps:
1) Bingo cards can be created with learning points written on each of the nine squares. Additional cards should be made with the same learning points, placed in different squares.

2) Students mark their card as the points are identified from the lecture.

3) When a student gets three vertical, horizontal or diagonal marks they should yell "Bingo!"

4) Identify a prize or some kind of reward so students will be motivated to participate. For example, extra credit points could be given for the winners.

Additional Information:
Although "Lecture Bingo" will not achieve many of the results possible with some of the more complex active learning strategies available, it is a good example creating a richer, more active learning environment for our students.

Activity Name: *Mini Cases (Group Activity)*

Task Complexity Continuum	Course Objective Continuum
Simple ▲ Complex	Knowledge ▲ Skill

Classroom Interaction Continuum	Continuum of Student Experiences
Limited ▲ Extensive	Inexperienced ▲ Experienced
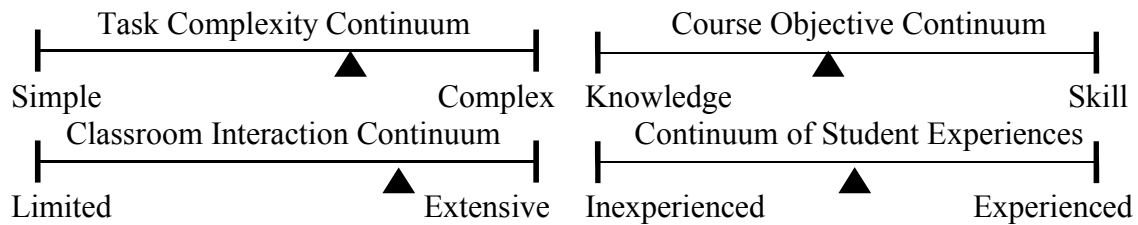
Activity Description:
Mini cases are small, carefully selected clusters of information that invite students to analyze a set of facts or circumstances, offer interpretations, form judgments and make decisions using concepts in the discipline.

Activity Purpose:
Works well either as a way of introducing a new topic or as a way of closing a unit of study and helping students consolidate learning gains.
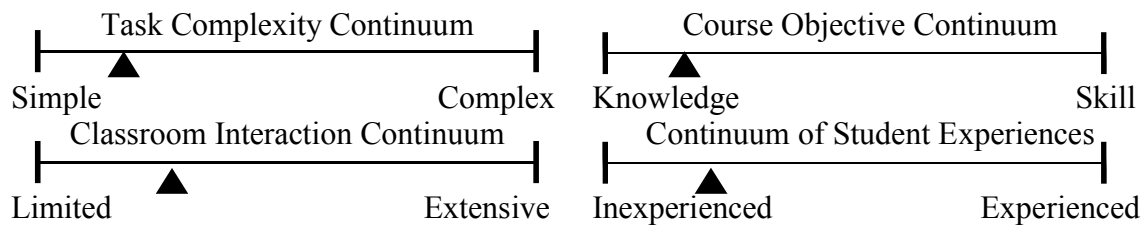
Implementation Steps:
1) Direct students to work on a case in groups of 3-6.

2) Construct the assignment so as to require an outcome in the form of a concrete task, such as a judgment, a decision, a recommendation or a prediction.

3) Require groups to reach a consensus on their decision.

4) Focus the decision-making process through a series of written questions to guide small group discussion.

5) Debrief the discussion to compare group responses. This comparison ensures everyone's interest and engagement.

6) Debrief to help the whole class interpret and understand the implications of their solutions, as related to the content of the discipline.

7) Allow groups to work without instructor interference.

Additional Information:
The questions the groups must answer should move from concrete and known to the more abstract and uncertain. In order to maintain focus on key issues, the questions from any one mini-case session should be limited to 3 or 4.

Activity Name: *Muddiest (or Clearest) Point*

Task Complexity Continuum

Simple   Complex

Classroom Interaction Continuum

Limited   Extensive

Course Objective Continuum

Knowledge   Skill

Continuum of Student Experiences

Inexperienced   Experienced

Activity Description:
After a lecture or at a natural break in the presentation, ask the question, "What was the "muddiest point" in today's lecture?" or "What was the "clearest point" in today's lecture?" You can also use this question after a reading assignment.

Activity Purpose:
To force the student to think about the material and to let you know if there is something that is unclear or confusing.

Implementation Steps:
This is a variation on the one-minute paper, though you may wish to give students a slightly longer time period to answer the question.
1) Here you ask (at the end of a class period, or at a natural break in the presentation), "What was the "muddiest point" in today's lecture?" or, perhaps, you might be more specific, asking, for example: "What (if anything) do you find unclear about the concept of 'personal identity' ('inertia', 'natural selection', etc.)?".

2) You can then address the unclear points.

Additional Information:
After or during a lecture or after a reading assignment.

Activity Name: *One Minute Paper*

Task Complexity Continuum

Simple ▲   Complex

Course Objective Continuum

Knowledge   ▲   Skill

Classroom Interaction Continuum

Limited   ▲   Extensive

Continuum of Student Experiences

Inexperienced ▲   Experienced
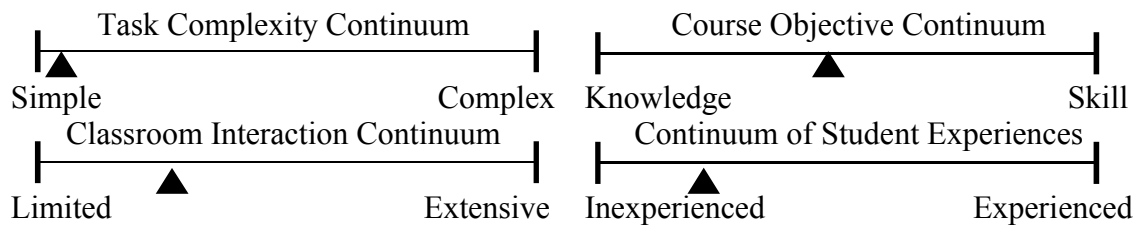
Activity Description:
Facilitator passes out small sheets of paper to students. They are asked to spend one minute writing about an assigned topic. One Minute Papers have been used for everything from attendance to testing. For the purpose of learning using the activity to reinforce readings or exercises works well. The activity can also be used to determine what content areas teachers should focus on.

Activity Purpose:
The "One Minute Paper" provides an opportunity for all students to have a voice not just those who are vocal in classroom discussions. It facilitates discussion and helps to focuses attention on a point. It is a quick way to check student understanding. It provides concise feedback to specific questions.

Implementation Steps:
1) Take a piece of paper and divide it into fourths. Divide the paper and hand it out to students.

2) Introduce a topic or identify a question they should answer on the paper.

3) Students have one minute to write an answer to your question or respond to the topic.

4) Collect the papers and discuss the responses or save for future use.

Additional Information:
Reference: "Teaching Creatively: Ideas in Action", Morrison-Shetlar & Marwitz, 2001.

Activity Name: *Pass the Chalk*

Task Complexity Continuum		Course Objective Continuum	
Simple	Complex	Knowledge	Skill
Classroom Interaction Continuum		Continuum of Student Experiences	
Limited	Extensive	Inexperienced	Experienced
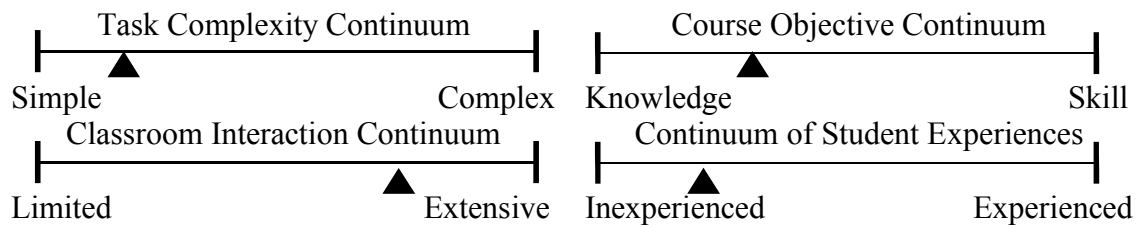
Activity Description:
Pass the chalk around the classroom to control and encourage discussion.

Activity Purpose:
Gives each student a voice; Encourages full participation; Focuses on task at hand; Stimulates class interest and attention; Gives immediate feedback and reinforcement; Generates positive group dynamics; Shifts initiating force from teacher to peer; Provides forum for auditory and kinesthetic learning.
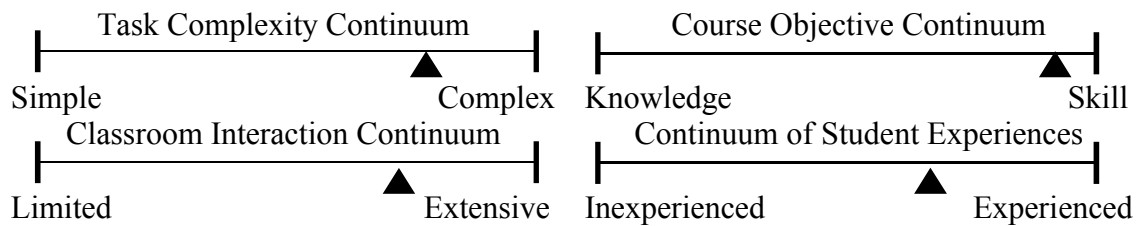
Implementation Steps:
1) Use a piece of chalk, pen, or soft toy.
2) Give the item to a student and then ask a question.
3) The student with the chalk answers the question, and if correct, may pass the chalk to another student.
4) The recipient must take the item and respond to the next question.
5) If anyone fails to answer correctly, he or she may pass the chalk, knowing that it will eventually come back.
6) The instructor may at any time intercept the item and give it to a particular student.

Additional Information:
To include every student in the class; when discussion lags or attention wanders; at end of a unit to reinforce concepts.

Reference: "Teaching Creatively: Ideas in Action", Morrison-Shetlar & Marwitz, 2001.

Activity Name: *Performance Video Tape/Recording*

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        Task Complexity Continuum              Course Objective Continuum
    ├──────────────────────▲──────┤      ├────────────────────────▲───┤
    Simple              Complex     Knowledge                    Skill
        Classroom Interaction Continuum      Continuum of Student Experiences
    ├────────────────────▲────────┤      ├──────────────────▲─────────┤
    Limited            Extensive     Inexperienced           Experienced
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Activity Description:
Student performance, presentation, speech, or activity is recorded for immediate playback. This provides an opportunity for students to see their performance themselves immediately after it is given. Students can see what they did well and where improvement is needed. Faculty can use playback to stress suggestions and feedback.

Activity Purpose:
To provide instant and future record for review by students and faculty. Professor used this activity to provide feedback for students learning Music Conducting. Each performance was videotaped. After presentation the tape was rewound and played back while the professor discussed the performance with student.
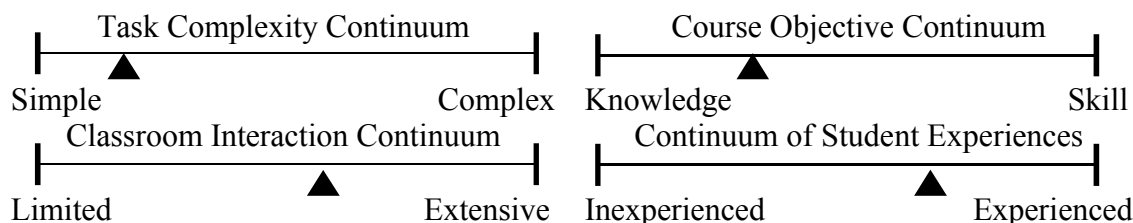
Implementation Steps:
1) Determine the appropriate recording method for activity. Tripod and remote control provide a less invasive method for taping an activity.
2) Set up equipment before performance so it is part of the environment when student arrives. This will help to minimize any affects that the equipment will have on performance anxiety.
3) Set up playback equipment so that immediately after the performance the activity can be reviewed.

Additional Information:
In addition to immediate playback students may request copies for future reference. The Faculty Development Center (FDC) (http://www.webster.edu/ietl/) at Webster University maintains video equipment for taping, editing, and producing video for performance recording.

Activity Name: *Pre-Class Reading Responses*

Task Complexity Continuum	Course Objective Continuum
Simple ▲ Complex	Knowledge ▲ Skill
Classroom Interaction Continuum	Continuum of Student Experiences
Limited ▲ Extensive	Inexperienced ▲ Experienced

Activity Description:
Web based forms, course discussion tools, or emails are used to collect information from students prior to classroom discussion. The information is e-mailed to the faculty teaching the course who reviews the information **"just-in-time"** for the next class discussion.

Activity Purpose:
This activity helps students gain a deeper understanding to reading assignments and helps faculty To determine which concepts the students find difficult or confusing. Have students fill in a web-based form after each reading assignment. After reading the responses, the instructor can tailor the lecture to the class.
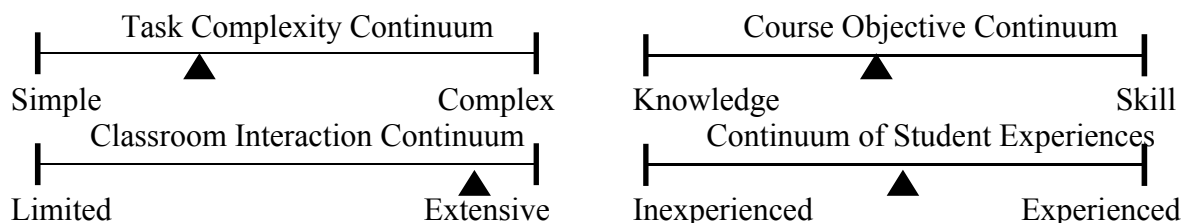
Implementation Steps:
1) After completing a reading assignment, students fill out a web-based form which has 3 questions.
2) 2 questions deal with the content they have read and are hard questions. The student must read the assignment to be able to answer these questions. The 3rd question is always the same, "Please tell us what you found difficult or confusing in this reading assignment. If you did not find anything difficult or confusing, tell us what you found most interesting."
3) The instructor reads the student submissions "just-in-time" to adjust the classroom lesson to suit the students' needs.

Additional Information:
Course discussion tools provided in Webster's course management systems, Web-CT or Luminous can be used to collect the pre-class information needed in this activity. Visit the FDC site (http://www.webster.edu/ietl/) for more information regarding resources.

URL Reference: http://webphysics.iupui.edu/jitt/jitt.html

Activity Name: *Role Playing for Difficult Topics*

Task Complexity Continuum

▲

Simple   Complex

Classroom Interaction Continuum

▲

Limited   Extensive

Course Objective Continuum

▲

Knowledge   Skill

Continuum of Student Experiences

▲

Inexperienced   Experienced

Activity Description:
Learning about organic compounds or other scientific subject areas is extremely important but is often disliked by students. A way to reinforce their learning and to meet the needs of various learning styles is to allow them to develop and perform a script in the form of a play. This allows for group interaction and students learning from one another in a very active way.

Activity Purpose:
1) To enrich student understanding of organic molecules in an unusual way.
2) To allow students to incorporate this difficult knowledge into ways of thinking and understanding that they value.

Implementation Steps:
1) Organize the class into groups of four students, attempt to include at least one uninhibited, creative student in each group.
2) Each group is to select one of the "Acts" and develop a skit to perform in class on the designated day.
3) Creativity, humor, and factual, conceptual correctness are to be encouraged.
4) It is important to approach this topic in a way that the students do not think of it as drudgery. Tell them that it is their day to perform and have fun. 5) A sample handout appears below.

Additional Information:
A fascinating example of insect behavior used in a role playing activity: The Honeybee Waggle Dance (http://insects.ummz.lsa.umich.edu/MES/notes/entnote22.html)

A script for "The Compounds of Life", a Biological Farce in Four Acts:

Act I Polysaccharide: Ain"t She Sweet? or (I thought all sugar was the same)
Act II Where Have All the Monomers Gone?or (What's this thing they call polymerization?)
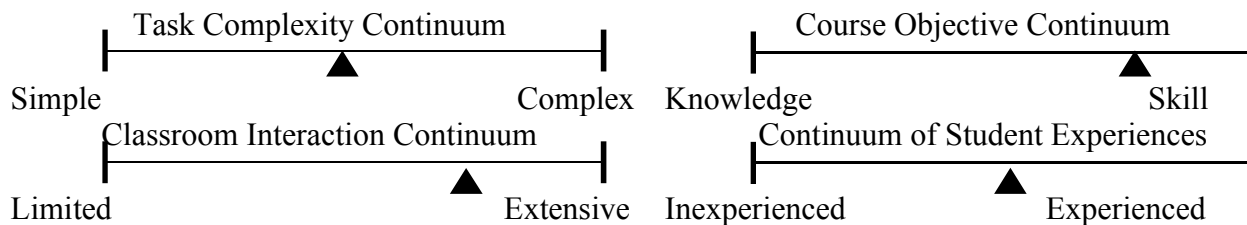Act III Can You Unfry an Egg? or (the protein who came unraveled)
Intermission Refreshments Provided
Act IV The Promiscuous Enzyme or (Who is your substrate tonight?)

Originally published by Alan Hoffman 1991 Woodrow Wilson Biology Institute

Activity Name: Treasure Hunt

Task Complexity Continuum	Course Objective Continuum
Simple ▲ Complex	Knowledge ▲ Skill
Classroom Interaction Continuum	Continuum of Student Experiences
Limited ▲ Extensive	Inexperienced ▲ Experienced

Activity Description:
The Treasure Hunt is a version of the Web-Quest that is designed to have students build factual content on a specific topic. The basic strategy here is to find web pages that hold information (text, graphic, sound, video, etc.) that you feel is essential to understanding the given topic.

Activity Purpose:
The activity works well when gathering relevant factual information and providing specific background information is needed. The Treasure Hunt contains a central question that students answer based on information gathered during the hunt. Their answer with indicates how comprehensively they understand the topic. Supporting questions are designed to provide the semantic boundaries and the scope of the project.
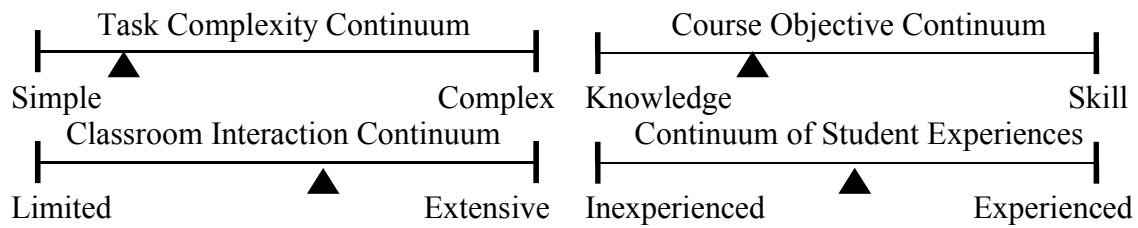
Implementation Steps:
1. Provide 10 to 15 factually rich and relevant links about a specific topic.
2. After finding the links create a key or central question for each resource that prompts learners to discover the facts and details that you want them to understand.
3. Explain to the learners what the activity is and the desired outcomes
4. Demonstrate the procedures for the Treasure Hunt and answer any questions from the students regarding the activity.
5. Pass out the list of questions along with the associated WWW resources and include space for students to answer the questions.
6. Observe each groups progress and answering questions when needed.
7. Keep students on track and make sure they are progressing smoothly.

Additional Information:
1. A short tutorial on searching the WWW is helpful for students who are unfamilar with the Internet.
2. Treasure Hunt examples can be found at the http://www.kn.pacbell.com/wired/fil/formats.html#Hunt web site.
3. WWW searching information and resources are available at: http://library.webster.edu/nethelp.html

Activity Name: *Think/Pair/Share or Write/Pair/Share*

Task Complexity Continuum
Simple ▲————————————— Complex

Course Objective Continuum
Knowledge ——————▲—————— Skill

Classroom Interaction Continuum
Limited ———————————▲—— Extensive

Continuum of Student Experiences
Inexperienced —————————▲——— Experienced

Activity Description:
Students try out ideas with each other before they make them public.

Activity Purpose:
Focuses student attention, encourages problem solving individually and in groups, allows shy students to gain confidence, increases the body of material for student response, provides forum for auditory and kinesthetic learning.
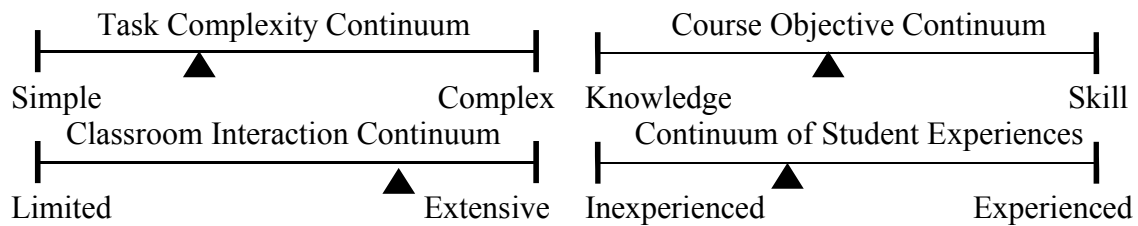
Implementation Steps:
1) Ask the students to think about an issue and write down their response/answer to it.
2) Have them turn to a partner and share their idea.
3) Ask them to write down the ideas they both had.
4) Ask the class if they heard any responses that were particularly good.

Additional Information:
Activity can be used to allow the students to share what they know, to allow students to think through a problem by themselves and then share and develop the idea, to break the routine during a class, to allow students to talk through a problem. Keep the talk time brief (1-3 minutes) to keep them on task; have the students share ideas (from the first partner exchange) with a second partner.

Reference: "Teaching Creatively: Ideas in Action", Morrison-Shetlar & Marwitz, 2001.

Activity Name: *Using Video Clips to Pique Student Interest*

Task Complexity Continuum   Course Objective Continuum

Simple   Complex   Knowledge   Skill

Classroom Interaction Continuum   Continuum of Student Experiences

Limited   Extensive   Inexperienced   Experienced

Activity Description:
There are many ways to use video to capture students' attention and increase interest in a topic or subject area. Viewing clips can help learners make a connection to something they care about and provide a visual experience that they can relate to an idea or subject area. One effective way to utilize video as a active learning tool is to create video clips from a popular recognizable film that highlights an idea or topic.

Activity Purpose:
1) To increase student attention.
2) Focus student attention.
3) Attaches a "Human Dimension" to a content area.
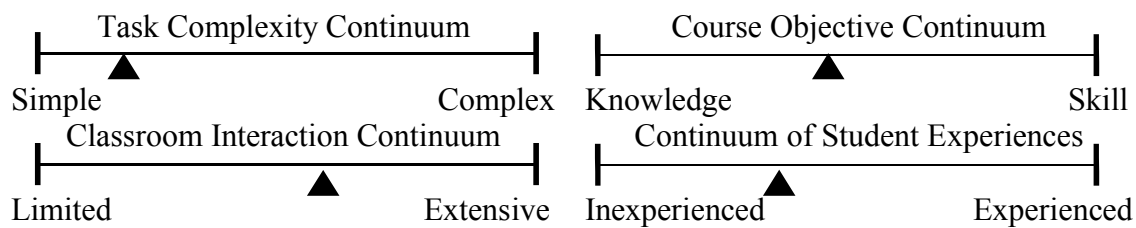4) Create affective response.

Implementation Steps:
1) Capture video.
2) Edit and add titles.
3) Import into presentation.
4) Play from laptop to improve performance.

Additional Information:
Requires some video capture and editing equipment and software. There are several free tools that faculty can use to capture and edit video clips. Clips can be played from a laptop, CD, DVD, Web Site, or as a component in a presentation.

The Webster University Faculty Development Center (FDC) provides hardware and software for capturing, editing, and packaging video for teaching purposes. The FDC sponsors workshops and training events to help faculty gain the necessary skills to use video as a learning tool.

Activity Name: *Video, Audio, or Animated "Fill in the Blank"*

Task Complexity Continuum   Course Objective Continuum

Simple   Complex   Knowledge   Skill

Classroom Interaction Continuum   Continuum of Student Experiences

Limited   Extensive   Inexperienced   Experienced

Activity Description:
Students watch short, unfinished clips of a video and fill in the blanks for themselves.

Activity Purpose:
Gives relevance to abstract concepts; encourages critical thinking and problem-solving; reveals embedded preconceptions; reinforces cause-effect sequences; provides forum for visual and auditory learning; stimulates creative thinking.

Implementation Steps:
1) Play a brief segment of a video or audio clip and stop the clip before the end of the sequence.
2) Ask students to write what they think happens next in the video.
3) Let them share their thoughts and ideas with a partner.
4) View remainder of clip.
5) Discuss the potential outcomes and differences between the clip and what they imagined.
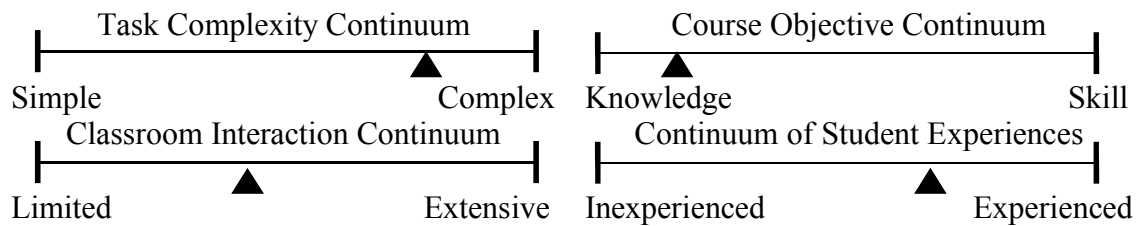
Additional Information:
This approach could be used to give the "big picture"; to check understanding; to draw attention to important concepts; to give real life examples.

You can ask them to share concepts and group them on the board according to similarities. Let students make comments about the different groupings. When they play the ending emphasize the way that experience or background plays a role in perceptions.

Reference: "Teaching Creatively: Ideas in Action", Morrison-Shetlar & Marwitz, 2001.

Activity Name: *WebQuest*

Task Complexity Continuum

Simple   Complex

Classroom Interaction Continuum

Limited   Extensive

Course Objective Continuum

Knowledge   Skill

Continuum of Student Experiences

Inexperienced   Experienced

Activity Description:
"WebQuests are inquiry based lessons in which all or part of the information that learners interact with comes from resources on the Internet. A short-term WebQuest is designed to be completed in a few class periods. At the end of a WebQuest, a learner will have grappled with a significant amount of new information and made sense of it. Check out the link to WebQuest collections at http://edweb.sdsu.edu/webquest/webquest_collections.htm. These are lists of WebQuests created in various settings, mostly University courses and workshops." (Merlot)

Activity Purpose:
Aids students in constructing meaning out of complex topics. One of the complaints educators have regarding the Web is that it often presents too much unverified information on a topic. That characteristic of the Web is what makes WebQuests successful. During the process of compiling information on a topic, students begin to formulate concepts and construct meaning of complex subjects.

The Web provides a working environment where students have access to a variety of information and differing opinions. WebQuests are designed to use learners' time well, to focus on using information rather than looking for it, and to support learners' thinking at the levels of analysis, synthesis and evaluation.

Implementation Steps:
1) The instructor must first design a WebQuest (examples may be found at http://webquest.org/).
2) Next, assign the WebQuest to small groups.
3) While the students engage in the WebQuest, they will be gathering information from the web.

Additional Information:
Problem Based Learning WebQuest:
http://edweb.sdsu.edu/clrit/PBL_WebQuest.html.

The FDC has incorporated WebQuests into several Faculty Development Training Classes. One example was: Participants were broken up into groups of 3. Each group was assigned to find 3 examples of Active Learning on the

Internet. They were then to choose the best example and present it to the rest of the class using the actual information they discovered in the WebQuest.

When designing WebQuests it's best to choose aspects of a topic that are under dispute or that at least offer a couple different perspectives. Current events, controversial social and environmental topics work well. Also anything that requires evaluation will evoke a variety of interpretations.