Using Learning Activities

SAE Professional Development

Instructor Development Session
April 5, 2006
At the SAE World Congress
Use of learning activities greatly enhances the classroom experience. Below, please find information on use, and a sample of some learning activities.

**Using Learning Activities**

If you are going to use learning activities in the classroom, here are some ideas to keep in mind.

**Characteristics of a Good Learning Activity**

Using an activity just to make the classroom more active is generally not a wise use of class time. A good learning activity should:

- Relate to one or more learning outcomes.
- Be appropriate for the learning outcomes. (For example, it is very difficult for an attendee to practice problem solving on a multiple-choice test.)
- Motivate and engage attendees.
- Integrate assessment and feedback.
- Provide practice with learning content.
- Facilitate transfer to real world applications.
- Require students to make decisions based on facts, information, logic, and/or reasoning (Duch, 2001).
- May require students to determine what information is needed and/or what steps or procedures need to be taken (Duch, 2001).
- Maybe given in stages with additional information in the second or later stages (Duch, 2001).
- Complex enough to engage a whole group directly and preclude a divide and conquer strategy (Duch, 2001).
- Initial questions should be open ended or controversial to generate student discussion (Duch, 2001).
- Includes the appropriate informational resources to support the student such as lecture, textbook, research materials, and so on.

Depending on the use of a specific activity, it may not meet all of these characteristics. For example, an activity used to assess prior attendee knowledge may not meet the criteria of practice with learning content and transfer to real world application. The same maybe true of a content activity used in place of a lecture as a way for students to generate the learning content.
Generic Question Stems

Generic question stems serve a variety of purposes. They can be provided to students as an aid in developing review or discussion questions, or they can be used to generate questions as part of an activity or for student reflection. (Adapted from King, 1995 and Endres, 2003). They are generally used when introducing or implementing learning activities.

- Compare … and … with regard to…
- Describe … in your own words.
- Do you agree or disagree with this statement…? What evidence is there to support your answer?
- Explain how…
- Explain why…
- How are … and … similar?
- How could … be used to …?
- How does … affect…?
- How does … apply to everyday life?
- How does … tie in with what we learned before?
- How does… apply to everyday life?
- Summarize … in your own words.
- What are the implications of…?
- What are the strengths and weaknesses of …?
- What do we already know about…?
- What do you think causes …? Why?
- What does … mean?
- What is … analogous to?
- What is a counter-argument for …?
- What is a new example of …?
- What is another way to look at …?
- What is the best … and why?
- What is the counter argument for…?
- What is the difference between … and …?
- What is the meaning of…?
- What is the nature of …?
- What is the solution to the problem of …?
- What is… analogous to?
- What would happen if …?
- Why is … happening?
- Why is … important?

Thanks to Baker College, Effective Teaching and Learning Division for their copyrighted contributions to this document.
# Sample Learning Activities

## Class Discussion

<table>
<thead>
<tr>
<th>Suggested duration:</th>
<th>15-20 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To bring out different points of view or concepts from a student-centered point of view.</td>
</tr>
</tbody>
</table>
| Implementation:     | 1. Create a set of discussion questions you can pose to students.  
2. Tell the students the goal for the discussion.  
3. Ask the question and let the students answer/discuss/debate |
| Notes:              | 1. Ensure that the discussion remains on track and that all of the goals for the discussion are met before ending the discussion.  
2. The Generic Question Stems can be used as a starting point for generating questions for this activity. |

Source:

## Case Studies

<table>
<thead>
<tr>
<th>Suggested duration:</th>
<th>15-60 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To present stories or dilemmas which require students to investigate, analyze and synthesize available information, solve problems and evaluate various viewpoints on the issue.</td>
</tr>
</tbody>
</table>
| Implementation:     | 1. Create or describe a story or dilemma.  
2. Ask students to investigate, analyze or synthesize the story or dilemma. Tell the students the goal for the discussion.  
3. Create and ask a set of questions and let the students answer/discuss/debate. |
| Notes:              | 4. Ensure that the discussion remains on track and that all of the goals for the discussion are met before ending the discussion.  
5. The Generic Question Stems can be used as a starting point for generating questions for this activity. |

Source:
<table>
<thead>
<tr>
<th>Concept Review</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suggested duration:</strong></td>
<td>5-20 minutes</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To allow students a chance to review concepts you have covered in a previous lesson or session.</td>
</tr>
</tbody>
</table>
| **Implementation:**                               | 1. Ask students to identify an example for each of the concepts/theories/topics covered in the lesson.  
2. Direct students to form pairs (or small groups) and review their answers with a partner and come to consensus on at least one correct answer for each question.  
3. Ask students to share their answers with the entire class. |
| **Notes:**                                         |   |
| **Source:**                                        |   |

<table>
<thead>
<tr>
<th>Data Analysis</th>
<th></th>
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<tbody>
<tr>
<td><strong>Suggested duration:</strong></td>
<td>10-20 minutes</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>Allow students to practice data analysis and presentation skills.</td>
</tr>
</tbody>
</table>
| **Implementation:**                               | 1. Instructor provides students with raw data such as lists, graphs, or tables.  
2. Students prepare an analysis of the data. |
| **Notes:**                                         |   |
| **Source:**                                        | Bean, 1996 |

<table>
<thead>
<tr>
<th>Visible Quiz</th>
<th></th>
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<tbody>
<tr>
<td><strong>Suggested duration:</strong></td>
<td>10-20 minutes</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To allow review of material from reading, prior knowledge, or prior to a test.</td>
</tr>
</tbody>
</table>
| **Implementation:**                               | 1. Instructor prepares questions, or have students prepare questions in advance on overheads or PowerPoint slides.  
2. Students are divided into groups and each group given a set of cards marked a, b, c, d, t, and f for multiple choice and true/false answers.  
3. Instructors pose question and students respond as a group by displaying the appropriate letter for their answer. |
| **Notes:**                                         | The Generic Question Stems can be used as a starting point for generating questions for this activity.  
An adaptation is to ask the whole group questions periodically to gauge the level of understanding. |
| **Source:**                                        |   |
### Failure Analysis

<table>
<thead>
<tr>
<th>Suggested duration:</th>
<th>30-90 minutes (more if assigned as a group project outside of class)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To have students work through a problem backwards, identifying why a solution or problem failed and determine solutions that will work.</td>
</tr>
</tbody>
</table>
| Implementation:     | 1. Provide students with a case study or scenario that presents the topic in a failing light.  
                        2. Have students research the scenario or case study.  
                        3. Direct students to start from the failure and analyze the situation or scenario from the failure to identify the main causes of the failure.  
                        4. Ask students to write a paper or make a presentation about why the scenario or case study failed and how failure could have been avoided. |
| Notes:              | You can find more information about this on the web using the keyword “FMEA.” |
| Source:             | [Angelo and Cross, 1993](#) |

### One Minute Paper

<table>
<thead>
<tr>
<th>Suggested duration:</th>
<th>1-2 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To identify the student’s current knowledge on a particular topic. Most often used as an activation activity.</td>
</tr>
</tbody>
</table>
| Implementation:     | 1. Identify a question you want the students to answer relating to the topic or concept you are about to teach.  
                        2. Give the students a sheet of paper and allow them to write as much as they know about the topic in a defined amount of time.  
                        3. Collect these papers and review the student answers before covering the topic. |
| Notes:              | 4. You can also use this as a reflection activity after you have completed the instructional cycle. You can give the students back their original background knowledge probe and ask them to review it and make any changes to it so that they can visibly see the differences occurring as a result of the learning experience.  
                        5. This activity can also be used at the end of a teaching day when the course duration is more than one day. Ask attendees to write about key concepts presented that day.  
                        6. The Generic Question Stems can be used as a starting point for generating questions for this activity. |
| Source:             | [Angelo and Cross, 1993](#) |
### Questions

<table>
<thead>
<tr>
<th>Suggested duration:</th>
<th>5-20 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To have students develop a set of questions related to class content or a problem.</td>
</tr>
</tbody>
</table>
| Implementation:     | 1. Have students brainstorm possible questions related to instructor assigned topics.  
                      2. Have students select 2-3 best questions and explain why each question is a good question. |
| Notes:              | The Generic Question Stems can be used as a starting point for generating questions for this activity. |
| Source:             | |

### Think/Pair/Share

<table>
<thead>
<tr>
<th>Suggested duration:</th>
<th>5-15 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To allow students a chance to formulate an opinion on a topic and then share that opinion with others.</td>
</tr>
</tbody>
</table>
| Implementation:     | 1. Pose a question or problem to your students  
                      2. Direct students to spend a few minutes answering the item on their own.  
                      3. Direct students to pair up with someone and share their answers to the problem or topic.  
                      4. Debrief this activity by asking students to share what they heard that was interesting, and not in their original answer. |
| Notes:              | 5. You can use this as a paired activity that moves into increasingly larger groups to eventually reach a group consensus on a topic or issue.  
                      6. The Generic Question Stems can be used as a starting point for generating questions for this activity. |
| Source:             | |

### Categorizing Grid

<table>
<thead>
<tr>
<th>Suggested duration:</th>
<th>Ongoing in and/or out of class as appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To have students practice placing items into specific categories.</td>
</tr>
</tbody>
</table>
| Implementation:     | 1. Select 2 or 3 similar categories.  
                      2. List several examples that fit into only one category.  
                      3. Have students assign the examples to categories.  
                      4. Have students explain their reasoning, either in small or large groups. |
| Notes:              | |
| Source:             | Angelo and Cross, 1993 |