Creating and implementing in-class activities; principles and practical tips

1) **Choose a goal or topic to focus the activity**
   Look closely at your material and ask yourself some of the following questions:
   a. What is the most important content or learning goal and how might the activity support that?
   b. Are there existing materials (such as a lecture, assignment, or exam question) to base the activity on?
   c. Is there an important framework, model, or concept to reinforce?
   d. How will it be giving them practice thinking like an expert in the subject?
   e. What is most difficult? What gives students trouble? Are there exam questions students do poorly on?
   f. Is there a controversy in the material? Is there material that would make a good discussion?
   g. What could students work out on their own?

2) **Decide how students will engage with the material**
   The next step is to look at the material you've selected and decide how the students will interact with it. This is key for developing activities. Try to design it so all of the students engage deeply with the content, not just a few.
   a. Consider your context. How many students are in your class? How many may require some accommodation? Will you have help administering the activity? How will this work in your particular classroom setting? If the students will work in groups, how large will those be and how will they be formed?
   b. What type of activity will be used? If you have difficulty deciding, discuss it with a colleague. Here are a few options that work well with a variety of topics:
      i. Think/Pair/Share [typically 5-15 min] – This type of short activity is designed to let everyone engage with the material first individually and then in pairs. First the instructor poses a question, then students spend one minute thinking or writing silently about the idea on their own (you may have to enforce silence, some students will likely try to talk). Then students form groups of 2, each partner takes a minute or so describing their thoughts. Finally the instructor facilitates a discussion with the whole class. This activity will usually increase students' responses to questions posed in class.
      ii. Worksheets [typically 15-50 min] – Write a few questions that lead students through the content in a structured way and photocopy enough for everyone (but see #5d below). Encourage them to work in groups or pairs. The difficulty level should be set so that it is very challenging for most students if working individually, but reasonably doable in groups. An approach that works well is to make the first part relatively easy, so that most groups know how to start, and make later parts more challenging. Adjust the difficulty after running it the first time.
      iii. Case Study [typically 15-50 min] – In a case study, students engage with the content in a real world context. Many people present cases or examples to students in lectures, however it is more effective to give the students material and handouts (e.g. graphs, maps, data, …) that describe the conditions of the case and have them work in groups to make decisions about it. Choose a case that is compelling and requires the students to both analyze the situation and come to a decision or series of decisions and then justify their choices (examples: how to proceed with a project, what to recommend to clients, where to drill, what future changes to expect, how to reduce energy loss, which technique or instrument to use to achieve a goal, etc.).

3) **How will the students be motivated to put in effort?**
   a. Is it challenging, but doable in groups? Will students see that they are becoming more "expert" at something?
   b. Can you connect the activity to a good real world example or something they may do in their future careers?
   c. Does it convey why you and others see this topic as interesting and important?
   d. Does it involve them making decisions and justifying actions, not simply following set procedures?
   e. Does the activity relate to the types of tasks students will be asked to complete on a midterm or final exam?

4) **What product will students generate?**
   a. Consider more sophisticated tasks. For example, have students make and justify a **decision** (and perhaps identify the **criteria** used to make a decision), produce a **prediction**, produce a **ranking**, or make a **judgment** (e.g. best/worst/most efficient).
   b. Consider having students produce a novel representation, such as a specialized graph or sketch.

c. It is usually best to avoid products that depend simply on applying a procedure (such as solving a familiar quantitative problem) or involve extensive writing. These tend to cause more "solo" than "group" work, and are better given as homework. Class time is better spent developing scientific reasoning, and getting feedback.

5) Logistics and facilitation

a. Decide how large your groups will be. In a large lecture hall with fixed seats, keep it to 2-3 unless you have them talk with rows in front/behind them. Four-in-a-row doesn't work because the people on the ends get left out.

b. For longer activities, assign roles such as discussion leader, note-taker, or reporter based on arbitrary criteria.

c. Make it very clear what students are expected to do. Ask: "does everybody know what to do?"

d. Decide how many copies of the activity you will hand out (if you're handing something out). If you have difficulty getting many of your students to work in groups, you can hand out only one sheet per group and make it clear that you expect only one submission per group. On the other hand, it is beneficial for all students to have a copy of their work; some instructors have the students use "carbonless" copy paper with enough copies for all.

e. During the activity, CIRCULATE and listen to what students are talking about. Look for examples from groups that you could show to the rest of the class for discussion (the doc cam works well in large classes).

f. Plant good questions: if someone asks you a question relevant to everyone, tell them it is a good one and ask them to ask it when you return to the front of the class.

g. Collect something from the students (a completed worksheet, clicker answers…) so there is clear accountability for doing the work. You don't need to mark them, but check off for participation and look for useful examples to help you learn more about student thinking and difficulties.

h. Be sure to wrap up the activity effectively. Have a few groups explain their answers. It is more interesting if their answers could be different and spark discussion. Finish by giving your expert summary. Avoid giving a detailed solution that would encourage a student to passively sit through the activity, waiting for you to eventually give them the answers.

6) Assessing the activity

After you've run your activity, reflect on how it went and how it might be improved.

a. Did anything surprise you?

b. Did the students understand what was required? Were they frustrated?

c. Did they engage the way you thought they would? Do you need to adjust the difficulty level?

d. Did they learn what you were trying to teach them (and how can you tell)?

e. Did they enjoy it?

f. Do you need to modify any of your learning goals based on how this went?

7) Other considerations

There are a few other considerations that help in developing activities:

a. Create checkpoints during the activity (e.g. a clicker question, or a brief full-class discussion) within longer activities so you can help groups stay roughly in synch.

b. If you know you will have fast groups add a "bonus" or extra consideration to the end of the activity, one you expect only a few groups will get to.

c. Save class time by having them prepare for the activity. Assign reading and have them answer some relevant questions prior to class.

d. Remember feedback! How are you going to measure and communicate how they've done? Is there a follow-up task that will ensure they think about and use the feedback?

8) Integrating activities into your course structure

a. Aim to make activities a normal, regular part of in-class time.

b. If you're transitioning from dominantly lecture delivery, a good goal is to incorporate at least one 5-minute activity into each 50-minute lecture period, or a longer activity each week. There is probably something in each of your lectures that could be turned into a good activity, particularly if there is student pre-class preparation.

It can be very helpful to bounce your ideas off STLFs, other faculty, and/or teaching assistants. For more resources, see: www.cwsei.ubc.ca/resources/instructor_guidance.htm. Particularly relevant 2-pagers: *Group Work in Educational Settings* and *What Not To Do; practices that should be avoided when implementing active learning*.