Considerations for Teaching in Active Learning Classrooms

Teaching in an ALC will likely be a very different experience from what you're used to. In order to prepare yourself for teaching in these spaces, consider the following:

- Observe others using the room.
- Visit the room before you meet your class for the first time. During this visit, familiarize yourself with the technology in the room.
- If you specifically requested to teach in an ALC, make students aware of the reasons why you selected this space for your course. The rationale for an instructor's decision and pedagogy choices should be shared with students to help them become informed, empowered partners in the learning process. Be persuasive when describing the benefits of active and collaborative learning.
- If you were assigned to an ALC, you should still talk to students about how you plan to use the room and how that use will benefit their learning. Some suggestions: 1) share with students about your teaching philosophy and how this space fits into that philosophy; 2) help students understand the evidence that shows that collaborative, problem-based approaches may help them acquire more skills and knowledge in this course and beyond.
- Let students know that you realize the ALC is a big change for them as well.
- Build in several opportunities to get feedback from students regarding the course.
- Be flexible. The big advantage of an ALC space is that you get constant feedback on what the students understand and what they don't. If you feel that many students are confused, work to clear up the problem. Either find a student or group that understands things and can explain it to everyone, or explain it yourself with a mini-lecture.
- Note that ALC spaces don't work as well as lecture halls for delivering lectures. If you find yourself talking for long periods at a time, find an activity for the students to do.
- Address frequently identified problems immediately with the whole class. Feel free to stop an activity session to resume lecturing if you need to clear up a misconception.
- Remain flexible about student learning and be aware of difficulties students may be having. If many students do not understand a concept, this problem may need to be addressed in a lecture format and may require you to modify the scheduled activities during the class.

Specific Challenges

Instructors familiar with teaching in ALCs have identified several specific issues that those new to the rooms should consider. These include room issues, dealing with noise and distractions, tips for effective group work, methods of engaging students, and using the technology. For information on each of these topics, see the Specific Challenges area on this website or access the resources below:

- Room Issues
- Noise and Distractions
- Group Work
- Student Engagement
- Using the Technology

http://www1.umn.edu/ohr/teachlearn/alc/considerations/index.html
Room Issues in Active Learning Classrooms

These classroom spaces, with their round tables, whiteboards, and technology, are designed to foster an interactive, student-centered learning experience; however, aspects of the rooms can pose problems for instructors new to them. What follows are common issues that instructors may experience and some suggested solutions.

The layout of the rooms themselves poses certain challenges

Ideally, in-class content delivery will be minimized, and will be accompanied by visuals projected on the displays, so that seeing the instructor is not critical. There will be times, though, when the students need to focus on the instructor. Because of their arrangement—round tables spread throughout the room—ALCs lack a central visual focus compared to more traditional classrooms, making it difficult for instructors to know where to stand for content delivery. In addition, wherever an instructor stands in an ALC, some students will be facing away from her. Instructors have overcome these problems by creating a focal point in the room such as the podium or the main screen; they also develop a cue for getting students’ attention so that they will know to turn toward this focal point when necessary.

Advancing the slides may tie the lecturer to the podium

Being unable to move around the room defeats some of the advantages of the ALC space. To solve this, consider purchasing a remote control device such as TouchPad Elite (http://www.idadesignmobile.com/touchpad). It works on both Macs and PCs and can be used with an iPhone or iPod Touch to remotely control a computer or a mouse.

The tables are large

The tables in the U of MN ALCs can accommodate nine students each. Groups this size are typically too large for effective collaborative learning, both because students across the table may have trouble seeing and hearing each other and because large groups encourage some students to sit back and “hitchhike” on the work of others. Further, some tables have a raised console that can make discussion across the table somewhat challenging.

To address these issues, consider splitting students at a table into sub-groups of three or four to work on activities. (Note that each table in the U of MN STSS building is modular and can be pulled apart to form three smaller working surfaces that can easily accommodate three or four students each; tables in other ALCs might not be modular.) Some instructors develop assignments to take advantage of the design of the tables. Such an assignment might consist of two parts: The first part of a problem-solving activity is to be completed by the smaller groups, and the second is a whole-table debrief in which each sub-group shares its findings with the entire table.
It may be difficult to locate and hear who is speaking

When students speak: Request that students always use the microphones provided on each table and begin their question or comment by indicating their table number. Some instructors ask that students stand when asking questions or contributing to the discussion.

When the instructor speaks: If you circulate throughout the room during student activities and wish to make a comment to the entire class, you will be facing away from some students, making it very difficult for them to hear you without amplification. Therefore, it is particularly important that instructors use a microphone in the Active Learning Classrooms.

For other room-specific issues—including questions about using the technology, gaining access, and accessing supplies—contact the Office of Classroom Management at http://www.classroom.umn.edu.
Noise and Distractions in Active Learning Classrooms

Active and collaborative learning necessarily results in a great deal of student talk, leading to noisy classrooms. Combine that with the potential visual cues from multiple screens installed on the walls of the ALCs and you have an environment that can be overwhelming to some students and easily lead to distractions and off-task behavior in others. These distractions can be minimized by making sure that student tasks are carefully planned and well structured and by holding students accountable for completing those tasks. What follows is a series of common challenges faced by instructors in the ALCs and potential solutions to those challenges.

Constant interaction at tables can result in a noisy environment

It’s important to remember that noise in and of itself is not an indicator of a classroom problem--noise often indicates student engagement. Be sure to establish a cue or signal that lets students know that you need their attention and should stop talking.

Set expectations high to keep students on task

With any active learning strategy there is a risk that students will get off task and talk about things other than solving the problem or discussing the issue at hand. To prevent this, try circulating through the room so that you can monitor student work. Make sure that the activities you have assigned are challenging and take the full amount of time you have allotted to complete them. Hold students accountable for satisfactory completion of tasks by calling on groups randomly to report or by assigning points to the activity. If students realize they are accountable for high quality work, they will be less likely to breeze through the activity and spend the balance of the time socializing. Some socializing should be expected and can lay the groundwork for effective communication among group members. While excessive socializing should be monitored, providing students with useful, relevant tasks reduces this issue to a minimum. Finally, consider limiting the number of laptops at each table; this forces students to work together and reduces one of the biggest distractions facing students in any classroom situation: surfing the internet.

Laptop computers allow students to use email, Facebook, games and other computer resources not related to class activities

As mentioned above, limiting the number of laptops per table can help. You can also tell students to close the lids of their laptops when appropriate to help ensure that their attention is on you. If students are allowed to use their laptops, consider incorporating structured tasks to keep students on track. Some instructors provide students with “gapped handouts” (lecture outlines that contain spaces for note-taking) to encourage student engagement with the content. Others incorporate frequent questioning during didactic portions of the class period.
ALCs aren't right for all students

Teachers should be alert to the possibility that some students might find this learning environment over-stimulating. A situation arose in my class where one student with a health condition could not really function in the classroom because of all the screens, lighting, and other distractions that were more than the student could handle."

- Bernadette Longo, Writing Studies, U of MN OIT Faculty Fellow
Group Work in Active Learning Classrooms

The Active Learning Classrooms were designed specifically to support student group work. However, it’s important to remember that the arrangement of rooms—round tables with students facing each other—will not, by itself, lead to effective student collaboration. In order to make best use of the affordances offered by the ALCs, instructors must design assignments and activities with group work in mind, while students must be taught how to work effectively together. What follows are some guidelines for supporting student collaboration in the ALCs.

Tips to encourage productive group work in the ALCs

**The more intentional you are, the better student groups will function.** Provide students with clear expectations on collaborative work as well as resources on collaboration and teamwork, including roles and responsibilities in the team and strategies for how to work with challenging personalities and cultural considerations.

**Create student groups purposefully.** Students do better problem solving in heterogeneous groups. Students can be assigned to groups randomly or they can be intentionally grouped for differences in expertise, e.g., experience with technology, and other variables, such as age, gender, year in school, etc..

**Take advantage of the table organization.** When photocopying handouts for everyone, provide only one copy per (small) group of students. This strategy forces individuals to collaborate and is a good way to improve group cohesion. Likewise, you might require small groups of students to share a single laptop computer during class; sharing laptops has the added benefit of minimizing the distractions of technology by discouraging off-task behavior such as web surfing or viewing social networking sites.

**Have students work in groups to review difficult material discussed in lecture immediately after the material is covered.** In a biology class, for example, one professor discusses a number of cell biology experiments and then has the students work in their groups to diagram the experiments and teach each other about the methods used and main findings. This kind of activity offers an opportunity for students to identify confusing parts and ask questions about them.

**Grade on both individual performance and group performance.** For example, students might first take an on-line exam individually and then re-take the exam or a portion of the exam as a group during class. Individual scores can be raised by a predetermined percentage or number of points by the group exam score. For more on this strategy called “cooperative quizzing,” see the Cooperative Quiz tutorial.

**Teach students how to work in groups effectively.** Instructors too often provide little or no guidance to students on how to work together. Knowing how to work effectively in a team is not something that comes naturally to anyone. It is hard work, and it is especially essential in a collaborative process. Besides attention to the recommendations above, have students reflect together on the quality of their team work regularly and provide feedback on how well they are doing as a team. Learning effective team work is a process, not a one-time experience.
Approaches to Group Work

We recommend using the principles of Cooperative Learning or the methods of Team-Based Learning when designing group activities.

Cooperative learning

Cooperative learning is the intentional use of student groups to facilitate learning. There are five elements considered necessary for successful cooperative learning. They are

- Positive interdependence (each individual depends on and is accountable to the others)
- Individual accountability (each person in the group learns the material)
- Promotive interaction (group members help one another)
- Social skills (leadership, communication)
- Group processing (assessing how effectively they are working with one another)

For more on cooperative learning, including guides to using it in the college classroom and research on its effectiveness, see the Cooperative Learning Institute web site: http://www.co-operation.org/.

Team-Based Learning

This strategy was developed by Larry Michaelsen in the 1970's. Teams of students prepare individually and work together to apply important concepts during assignments that last a few weeks. TBL has several critical features:

- Teams are permanent, i.e., they persist for the entire term, and should be diverse in terms of various student characteristics. This provides enough "resources" for students to complete challenging assignments and allows a group of students to develop into a cohesive team.
- Students are held accountable for both individual pre-class preparation and team contributions. This is reflected in the system of assessments and grading used.
- Team assignments must promote both significant learning and team development. To do this, the assignments must be based on application of course concepts to complex, authentic situations and require group discussion and decision-making, rather than a series of tasks that can be parcelled out to team members. All teams get the same assignment.
- Students receive frequent and timely feedback. This is accomplished in several ways:
  - At the beginning of each segment, students individually take a Readiness Assessment Test based on the pre-class preparation assigned.
  - Immediately after this, they take the same RAT in their teams, with the ability to discuss each question and come to consensus. Using special scratch-off answer sheets, they can see if their first choice is correct. If it is, they earn full points for that question; if not, they discuss and make a second choice. If it is correct, they get fewer points for that question; if not, they repeat the process until they no longer get any points.
  - At the end of the segment, all teams present their solutions in class and get immediate feedback and assessment.

This strategy generally requires rethinking one's approach to course material and pedagogy, but seems to be very effective in promoting learning. Learn more at the Team-Based Learning web site: http://tblc.camp9.org/.

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Student Engagement in Active Learning Classrooms

A key part of making ALCs work is making sure that students are engaged in what is going on in the classroom. Below are some tips from experienced ALC instructors.

Establish a comfortable atmosphere

- Have students wear name tags during class at the beginning of the term. It helps the students and the instructor learn everyone’s names and makes for a friendlier environment. Make them easier to distribute by having different color tags for each table.
- Find ways to have fun in the space, like playing music or educational videos as they enter the classroom. Help make it more engaging to students by giving them a say in what you play as an incentive or just by polling them.
- Take advantage of the fact that the other students at a table will often listen to conversations between a student and the instructor. Sometimes you can get a table-wide conversation going.

Help students take ownership for their own learning

- While you don’t want to give students the answers to all of their questions, only asking them more questions in order to lead them to the answer will frustrate them and eventually keep them from asking questions at all. Look for the middle ground in answering student questions.
- Encourage student talking instead of instructor talking. One way to do this is by taking advantage of students’ tendency to listen to their peers more critically and having students explain things rather than the instructor.
- At the end of an activity, have students pass their notes to the person beside them to summarize the purpose of the activity and then return the notes. Have students read the best summaries. Students have an opportunity for reflection and are sharing what they think were the main ideas.
- After groups have completed an activity, ask students what they learned and add their responses to the lecture slides. This helps demonstrate to students that their contributions are an important part of the class.

Hold students accountable both as groups and as individuals

- Randomly call on students so that they all need to always be prepared.
- Give weekly quizzes so they can assess what they have learned as individuals.
- Make sure students are aware how much time remains for an activity by using a timer. This also helps make class time more efficient.
- Begin visiting groups immediately to make sure that students don’t delay starting an activity.

(Some material adapted from Faculty of the Biology Program, U of MN CBS; NCSU SCALE-UP; OIT; Wolfe.)

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Using Technology in Active Learning Classrooms

Many of our classrooms are now equipped with laptop connections and projectors. One of the features that makes the ALCs special is the ability to project not only from the instructor station, but also from any of three laptops at each table, to the whole room or to the table's dedicated monitor. Although we may not think of them as "technology," the abundance of whiteboards in the ALCs also offers additional teaching/learning opportunities. It takes some practice and planning to make good use of these features.

Instructors

- Get familiar with the technology before your class begins meeting in the ALC. The Office of Classroom Management (OCM) web site provides instructions for the technology in each ALC. In addition, hands-on training is available.
- Build in use of the technology and whiteboards as you plan your course and activities
- Train the students to use the technology the first minute of class and make it an expectation that computers are hooked up for group work at the very beginning of class.

Possible Uses

- Call on student groups to project the outcomes of their work—answers to questions, resources they have found, collaborative writing, etc.—to the whole room; this will increase student participation and engagement.
- As you move around the room, talking with groups as they work, project particularly good work so that the whole class can see it. Or, if a group has encountered a specific problem that others are likely to encounter as well, project it so you (or they) can work through it with the class.
- Project a graph related to current content on all the monitors, then call on a team or table to describe what it represents.
- Ask teams to use the whiteboards to brainstorm a process before committing to it, to create a quick mind map, or to work through a math problem.
- Computers or the whiteboards can be used to summarize discussions.

(Some material adapted from Bernadette Longo, U of MN Rhetoric and Faculty of the Biology Program, U of MN CBS.)

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Converting Your Course for the Active Learning Classroom

Not every class needs all the technology available in this classroom. But for courses where students can show their work via the computers or even teach part of the classes themselves, this is a great environment for collaborative and participatory teaching and learning. When converting a course, consider what types of information can be illustrated via technologies in classroom. Build in opportunities for students to lead the discussion using the technologies in the classroom.

— Bernadette Longo, U of MN OIT Faculty Fellow

Using the space and technology effectively will require changes in your course, and you probably won't get it right the first time. Often it is not an easy, seamless conversion to teach effectively in an ALC. It takes time, support, and experience to truly consider your curricula and how to redesign it to effectively teach and maximize student learning in an ALC. Creating and preparing course material (lectures and in-class activities) for the semester in advance will make the transition to this teaching style less stressful. Take advantage of the University's resources by working with teaching and technology consultants and/or using online resources and emerging evidence as to how students learn.

I think if I had two more iterations, by the time I had tweaked the approach I would be making pretty much optimal use of the smart room and [the space] probably would matter [to the student learning outcomes].

— Longtime U of M Instructor

Course Planning

Rather than starting with the material that you want to cover during the semester, begin planning your course with your desired outcomes in mind.

Key Questions to Ask

1. What do I want my students to know and be able to do as a result of this class?
2. What are the assignments that would allow me to see that my students have achieved the outcome?
3. What do I have to do in and out of class to prepare students to achieve the goals?
4. How can I use the space and technology to help achieve learning objectives?

Certainly what I think is the most important thing about spaces... is that the space has to be amenable to your pedagogies if your pedagogies are going to be as effective as they can be.

— Longtime U of M Instructor
Because methodology behind the ALC is grounded in problem-based, collaborative learning, it is crucial to plan in-class activities that effectively take advantage of ALC space and technology. The space itself shifts class dynamics. As one instructor explained: "The round tables - the fact that they are looking at each other, instantly changes their relationship with each other." It also affects their relationship with the instructor and the instructor's role, which becomes more like a facilitator.

Even with the most careful planning, it is not always obvious in advance whether an activity will work the way that you had hoped; they can be difficult to design properly. Finding a balance between the length of an activity for a potentially complex concept and achieving learning outcomes can be challenging. A number of factors affect what is the most appropriate length of an activity. The length of the activity should be proportional to the length of the class itself. In general, this teaching style is better suited to longer classes. Longer activities or ones that require interaction between teams (e.g., commenting on others' solutions) will also be more successful in a class with more instructors or TAs or other kinds of infrastructure support.

Characteristics of proven activities in an ALC:

- Support the lecture (and vice versa)
- Can be completed quickly
- Provide detailed written instructions with time limits clearly indicated
- Require students to work together and be accountable to each other (i.e., cannot be completed by an individual)
- Do not have a single correct answer
- Able to be broken down so that students can work on pieces and then integrate them
- Require students to take different perspectives or come up with alternative approaches
- Take slower students into account in estimating length of time
- Technologies used enhance the activity rather than complicating it or adding no value

Getting Help

If you are teaching a class with multiple sections, collaborating with the other instructors on planning can help make your life easier and improve the course itself. Whether you are teaching with others or not, there are lots of places to turn for help at the departmental, collegiate, and University levels.

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Planning Activities

...the time spent in the small discussion groups is really time truly spent on bringing up and correcting misconceptions—applying problems and principles to real-life problem solving.