



MAKING **LECTURES** **INTERACTIVE**

Polytechnic instructors often rely on lectures to introduce complex, technical material to complement hands-on learning that takes place in the shop, during lab sessions, or in the field. At BCIT, classes are often scheduled in 2–3 hour blocks.

Research consistently shows that students' attention declines after about 15 minutes, and that they remember far more when they actively engage with content and other learners than when they passively listen. Active learning offers a way to transform lectures from one-way information delivery into learning opportunities that actively engage students through interaction and participation, promoting deeper understanding, retention, and application of knowledge (Dewsbury et al., 2022; Wieman, 2014). By thoughtfully integrating short, purposeful activities, instructors can sustain attention, deepen understanding, and better prepare students for professional practice.

This guide outlines practical, evidence-based strategies for making lectures interactive. The strategies are grounded in principles of effective course design, student engagement, and the realities of applied, professional programs. Most of the learning activities in the guide can be adapted to both in-person and online lectures.

What Active Learning Is—and Why It Works

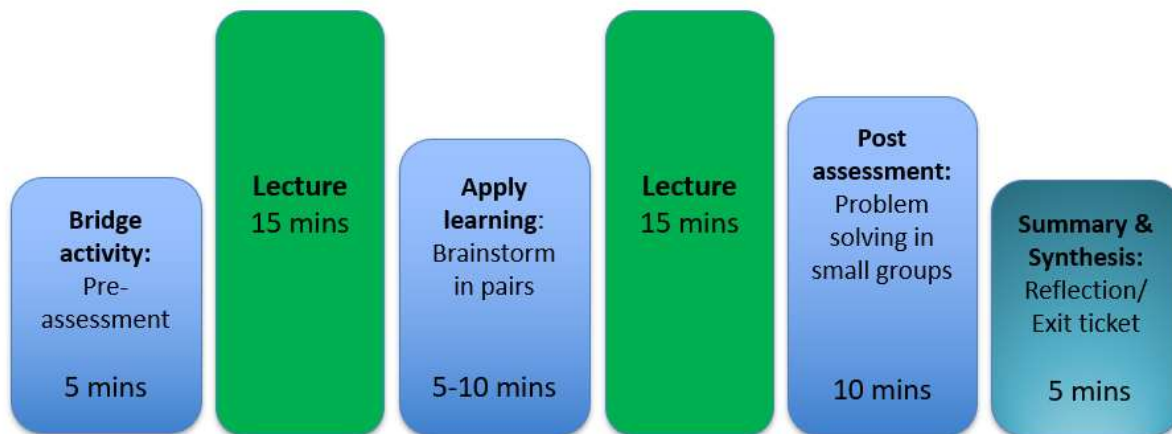
Active learning can be broadly defined as any instructional approach that engages students in meaningful activity and reflection about what they are learning and doing (Prince, 2004). Rather than simply receiving information, students “do something” with the content—talk about it, apply it, question it, or connect it to what they already know.

Active student engagement has been shown to result in improved performance and retention, stronger conceptual understanding (not just memorization), a greater ability to apply knowledge in new or professional contexts, and increased motivation and engagement (Freeman, 2014; Cavanagh, 2011).

Design Principle: Think in 15-Minute Chunks

A common concern instructors raise is: *“I don’t have time for active learning—I already struggle to cover all the content.”* When considering the use of active learning strategies, some instructors are concerned that it means they will have to eliminate lectures altogether. A viable approach is not to replace lectures entirely but to break them into smaller segments and invite students to apply what they have learned through problem solving, case studies, or other active learning activities in between the shorter lecture segments.

This structure helps maintain student attention, increases motivation, and often results in deeper learning because students grasp concepts more quickly and accurately, and can ask questions and fill in gaps in their knowledge before moving on to more complex material. For example, your lesson plan may include a pre-assessment of prior learning, some brainstorming in pairs, and some small-group problem solving.



Start Small: Low-Risk Active Learning Strategies

Many effective strategies take five minutes or less and require minimal preparation. Consider these examples.

Think–Pair–Share

After introducing a concept, pose a focused question. Students think individually, discuss in pairs, then share key ideas. This approach increases participation, surfaces misconceptions, and encourages reasoning. In large lecture halls, consider giving students seated in different sections of the room a slightly different question to increase engagement.

Sample questions:

- **Engineering:** “Which load case is most critical here, and why?”
- **Health Sciences:** “What would be your first clinical priority in this scenario?”
- **Construction:** “What safety risks stand out in this site plan?”

Polls

Polling is a fast, low-barrier way to gather student thinking and surface misconceptions. Use a poll or quick survey to invite students to respond to a question anonymously and show the results instantly. Polls are an effective teaching tool when you want to show a diversity of opinions and prior knowledge or invite students to share application of course concepts in real life.

Polls work especially well as a quick post- or pre-assessment of knowledge at transition points in the lecture—after explaining a difficult concept, before starting a new topic, or as a knowledge check before problem-solving exercises.

Sample poll questions:

- **Marketing:** “Which of the following factors most strongly influences consumer loyalty in your experience?” (Options: price, brand identity, convenience, social responsibility)
- **Forestry:** “Which silviculture technique is most appropriate for the stand shown in this photo?”
- **Transportation:** “What is the primary cause of delay in this transit network scenario?”
- **Carpentry:** “Which joint type would provide the strongest support for this load-bearing frame?”
- **Aircraft Maintenance:** “Which system would you inspect first given this indicator reading?”

“Tell Me What You’ve Heard About...”

Students do not enter classes as blank slates. Leveraging what they already know improves attention and learning. Collect responses verbally or on post-it notes, then group them into themes. This helps you identify misconceptions and tailor your lectures appropriately. It can be used as a pre-assessment strategy at the start of a new topic.

Sample questions:

- **Architecture/Building Trades:** “Tell me what you’ve heard about passive house design.”
- **Electrical Trades:** “What do you already know about arc-flash hazards?”
- **Nursing:** “What are two examples of effective patient-centred care that someone in your life has experienced?”

Buzz Groups

Buzz groups are small discussion groups formed for short periods of time to quickly brainstorm ideas to a specific problem. Using this activity to pose real-world industry challenges for students to solve makes learning relevant and job-connected. It also gives learners the space to apply ideas before stakes are high, and to learn from each other. Buzz groups work especially well in large lecture halls and can be completed in under 10 minutes. In online classes, give students a bit more time (10–15 minutes in breakout groups) and ask them to post their solutions to a shared document or google slide deck to make team work visible. After presenting a concept or a case study, ask groups of 3–5 students to generate possible solutions to a problem, identify risks, trade-offs, or constraints, or decide on the “best” approach and justify it.

Sample prompts:

- **Civil engineering:** “Which foundation type would you recommend for this site, and why?”

- **Health sciences:** “What additional information would you need from the patient and their primary care physician before making this decision?”

Minute Paper/Muddiest Point/Exit Ticket

Ask students to respond to one question in writing in the middle or at the end of the class to check in on how they are progressing. Responses can be anonymous, or students can put their name on what they hand in. Knowing which concepts students have mastered successfully and which ones require further clarification can help you plan the next lecture or inform how you sort students into groups or shape your exam questions.

Sample questions:

- “What is one thing that remains unclear for you at the end of this session?”
- “Describe one way the concepts from today’s class would show up on a job site or in the field.”
- “Of what we learned today, what is one concept/idea/question you would NOT like to have on the exam?”

Deepen Learning With Longer, Structured Activities

Once students are comfortable with simple activities, you can introduce more structured approaches that promote deeper learning.

Case-Based Brainstorming

Start your class by presenting a short, realistic scenario drawn from industry practice. Ask students to brainstorm possible responses and explore multiple perspectives. Effective case discussions focus on discovery rather than on solutions. Ask students to identify questions they would ask or information they would need before identifying solutions. Invite students to work in groups and compare the risks and advantages of multiple viable solutions and present their thoughts back to the class.

Divide the case discussion into multiple segments to break up a long lecture with periods of discussion/interaction or refer back to the case study throughout your lecture to connect theory to real-world practice. In online courses, use breakout groups for short case discussions.

Quescussion

Quescussion is a discussion conducted entirely in the form of questions aimed at encouraging deeper critical thinking and helping to map out complex issues collaboratively. Quescussion is particularly useful as a brainstorming strategy for topics where students might hold strong opinions and issues that elicit quick judgment and evaluation. In these cases, quesdiscussion can help shift the emphasis towards curiosity and inquiry and help students hear diverse perspectives.

The instructor begins by sharing a challenging/provocative question or statement. Students

respond to this prompt by suggesting questions of their own. As the discussion proceeds, students need to wait for 2 or 3 others to speak before they can speak again. If someone makes a statement, the rest of the class shouts “statement!” and the contribution needs to be withdrawn or revised as a question. Questions can be recorded on the board and serve as a map to inform future class topics, activities, and assignments.

Sample prompts:

- **Human Resources:** “Is it acceptable for potential employers to gather information about their applicants via social media such as Facebook, Instagram or X?”

Student questions following this prompt might include:

- “Is there legislation that guides information gathering via social media as part of hiring?”
 - “How can you get consent to do this before you’ve hired someone?”
 - “What types of information found on social media could bias a hiring committee?”
 - “How would committee members feel if the candidate looked on their social media?”
 - “Is it acceptable to look at a candidate’s social media account if it’s public?”
 - “What is the difference between reviewing someone’s LinkedIn page vs their Instagram posts?”
 - “What other guidelines do we have about considering professional information vs. personal experience and personal life in hiring—such as marital status, race, age, family size, hobbies, socioeconomic status?”
- **Library Science:** “How would libraries change if patrons had to pay a membership fee?”

Line-Up/Pro–Con Grid/Continuum

Getting up and moving can also energize students during class. Show a statement related to the course material that is likely to elicit diverse perspectives and invite students to respond by standing along an imaginary line or continuum to represent their opinion. Always give students the option not to participate if they prefer not to share their opinion, and consider the needs of students with any mobility challenges. Avoid sensitive topics for this activity that are likely to elicit strong emotions, unless you are able to build in a significant amount of time (an hour or more) to debrief the issues that arise.

Line-up works well in a wide variety of disciplines where students can engage with diverse opinions and approaches to quickly generate discussion, from construction management through health science, design courses, business, and engineering. Depending on the prompt, the two ends of the scale can be agree or disagree, low risk to high risk, or very confident to not at all confident.

Sample prompts:

- **Teaching and Learning:** “Should students be allowed to use Generative AI tools to complete parts of writing/coding assignments?”
- **Business:** “Should companies allow 100% remote work in X industry?”

Dotmocracy

When engaging students in an activity that involves choosing between multiple options, making a decision, or expressing their preference, dotmocracy can be a great strategy to visualize the distribution of choices in the class. Examples can include choosing between multiple responses to a case scenario in a health science or business class; selecting design elements of a building in architecture, construction or interior design; or choosing tag lines for a social media campaign in a marketing class.

Post the options, solutions, or approaches around the room. Using colourful dot stickers, invite students to “vote” for their preferred option. Each student has a limited number of “votes” to indicate preferences or priorities (typically 2 or 3). Dotmocracy is a bit like an instant poll of the class and can be used as a starting point for discussion or to narrow options that the group is considering. It gives students the opportunity to stand up and do a “gallery walk” of the options presented. Dotmocracy is particularly effective for design evaluation, project planning, weighing competing constraints (cost, safety, sustainability), or to identify which topics the class is interested in pursuing in greater depth.

Silent Strategies for Student Engagement

While many learning strategies involve discussion and interaction with other students, silent activities can be a powerful way to encourage student reflection and application of knowledge. Drawing a concept map or sketch, responding to a poll, and finding images or examples to illustrate course concepts and posting them to a shared document or online whiteboard are some examples that allow students to interact with the material individually.

Chalk Talk

Chalk talk is a silent, visual discussion approach developed by teaching scholar Stephen Brookfield. The instructor writes a question in the middle of the board and declares 5–10 minutes of silence for the discussion. Students add their own questions, responses or extensions to the board when they feel ready, and are encouraged to draw lines, connect ideas, add reactions, and build on each other’s contributions in silence. The most effective chalk talk questions are open-ended. Some instructors use the same key question twice, at the beginning and the end of their course, to demonstrate learning and show students how their understanding of a course topic has expanded or transformed.

Sample prompts:

- **Psychology/Health Science:** “What does addiction sound and feel like to you?”

- **Transportation:** “What does sustainability mean in the transportation industry today?”

Close the Loop: Debrief and Reflect

Active learning is most effective when students understand why they are doing it, and when they have a chance to reflect on what they got out of it.

After an extended active learning session such as a case study discussion or chalk talk, always take time to debrief the experience for a few minutes using questions similar to those below. Reflection can continue online on a discussion board if needed.

- What did we learn?
- How did this activity help clarify the concept?
- Where would you apply what we discussed in professional practice?
- What transferable skills did you practice during this activity (for example, resilience, dealing with uncertainty, asking questions, listening to diverse viewpoints)?

Address Common Concerns Proactively

Students may initially resist active learning if they are unfamiliar with it or unsure how it connects to assessment, but instructors often find that resistance fades quickly once students experience the benefits. Students will be more open to active learning if you start using it from the first day of class and explain how interaction supports their learning:

- **Explain the purpose of interactive activities:** At some point in your course, whether at the beginning of the term or before a major active learning activity, explain what students will get out of interacting with other students. Link the application of ideas during activities back to your course learning outcomes. Share how application can help solidify learning and connect to collaboration in the workplace. While the opportunity to develop communication, feedback, critical thinking, and collaboration skills during class discussions and group projects seems obvious to us as instructors, novice learners may not always connect classroom learning to these employability skills.
- **Clarify expectations and time limits:** Let students know how much time they have to brainstorm, and what they have to hand in or share with the class after their time working in pairs or groups in class. Include active engagement from day one of the term, so students develop a routine and know that they will have a chance to contribute to knowledge-building in class.
- **Provide options for participation:** Consider building in options during the activities so students have some choice about how they participate. For example, you may offer a couple options for cases during brainstorming. Or during a one-minute paper, allow students to write their thoughts, draw a mind map, or sketch an image.

- **Scaffold complexity:** Start with simple active learning approaches and repeat once or twice so students get comfortable with the process before adding in more challenging formats. Use simpler formats such as roundtable discussions or simple brainstorming for complex topics that are new to students, and introduce new formats such as debates or quescussion (discussion in the form of questions only) with relatively simple topics where students might have prior knowledge or opinions.

If you would like to sit down to brainstorm with someone as you are planning interactive learning activities for your course, please contact the [teaching and learning liaison](#) for your school, or contact one of the [Instructional Development Consultants](#) at the Teaching and Learning Unit.

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