Active Learning

Active Learning

A short guidebook

CENTRE FOR TEACHING & LEARNING

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TIOHTIÁ:KE (MONTREAL)

Pattern in cover image by Guy Moorhouse.

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Contents

Acknowledgements

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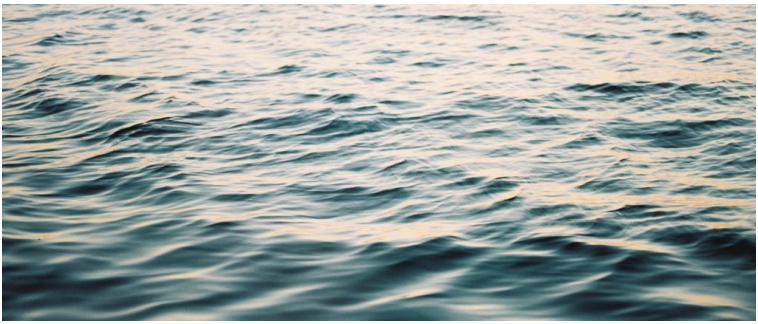
Thank you, Rachel Harris, for providing the support and enthusiasm to enable us to start the CTL's foray into authoring Pressbooks.

Land acknowledgement

When you read these words, it is an opportunity to connect with your relationship to the land on which you are situated. This is an invitation for you to reflect on your relationship to its Indigenous and other peoples, the land, its waters, and all other living things.



Close-up view of dramatic shadows on surface waves of the Kaniatarowanenneh (St. Lawrence seaway) running through Tiothiá:ke (Montreal).

I/We would like to begin by acknowledging that Concordia University is located on unceded Indigenous lands. The Kanien'kehá:ka Nation is recognized as the custodians of the lands and waters on which we gather today. Tiohtià:ke/ Montréal is historically known as a gathering place for many First Nations. Today, it is home to a diverse population of Indigenous and other peoples. We respect the continued connections with the past, present and future in our ongoing relationships with Indigenous and other peoples within the Montreal community.

Closeup of the bark of a tree in Tiothtiá:ke (Montreal).

You may discover more about Concordia's land acknowledgement, including its history, at this webpage.

Media attribution

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About the Centre for Teaching and Learning

The Centre for Teaching and Learning (CTL) at Concordia University provides support and resources to the teaching community. We use evidence-based approaches to support excellence, opportunity and inclusion for all of the academic community.

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PART I

INTRODUCTION

1. Introduction to Active Learning

Adult learners in an active learning classroom.

Advances in educational research and neuroscience are helping us to better understand how learning works and ways in which a university experience for today's students can become even better. Supporting more active and collaborative approaches to teaching and learning is a key finding of these discoveries. Active learning promotes greater student engagement and higher-order thinking by encouraging students to work together to become the main contributors to all discovery and knowledge-building processes in class and online.

To help ensure that these strategies are collaborative and lead to the shared creation of knowledge by all learners

together in groups, teams or peer-to-peer the activities must be intentionally designed, implemented and facilitated by the course instructor.

2. What faculty are saying

Professor Luis Rodrigues

Department of Electrical and Computer Engineering

> *"I found that the active classroom allowed students to have an enriched educational experience whereby they can learn problem-solving techniques by trying them on the whiteboard in small groups (of typically two students) for each board. In engineering, it is essential for students to get hands-on experience in problem-solving, which is typically only possible in homework assignments. The new classroom also makes it possible to get this experience in class with the guidance of the instructor of the course. I find that this is the biggest advantage of using this classroom."*

Professor Steven Henle

Department of Applied Human Sciences

> *"Two projectors means students sitting in any direction can see the screen. This was, in my opinion, the best attribute in the space. Once set up the computer and projector system worked very well. Students used the whiteboards when prompted to for brainstorming and other small group activities. The shades on the windows reduced glare and made seeing the presentation slides easier for the students. The ability to move the computer dock station was useful."*

Professor Ted Little, Theatre (retired)

Department of Applied Human Sciences

> *"The light, airy and flexible nature of this space makes it ideal for creative visioning, small group work or full class activities."*

3. What is Active Learning?

In brief

Active Learning is an approach to teaching and learning that:

- places the needs, interests, attitudes, and experiences of the students at the center of instruction planning;
- uses instructional strategies that are student-centred instead of instructor-centred;
- engages students in activities that help develop higher-order thinking skills through the application of knowledge, analysis, and/or synthesis.

Active learning defined

Active learning is an instructional approach designed to facilitate student engagement and the development of higher-order thinking. Through planned activities and with Instructor guidance, students see their understanding of course content deepen through direct interaction with the content and

collaboration with their peers. Activities are planned, implemented, and facilitated by the instructor.

Active learning in the classroom

Active learning works best when combined with lecturing through punctuated cycles of lecture and active learning activities, (eg: deliver a lecture on a key content area and then ask students to explore, investigate, research, hypothesize, reflect, problem solve and discover more, either individually, or in groups, as part of the overall learning process). Active learning can also be the main focus of an entire class period (eg: assign the reading or video content for review at home before class with a couple of guiding questions, then set students to work during class time to apply the knowledge/ concepts in an activity).

Watch this video to learn more about the benefits of active learning and how an active learning class differs from a more traditional class environment.

A YouTube element has been excluded from this version of the text. You can view it online here: https://opentextbooks.concordia.ca/active-learning/?p=5

Download video transcript

4. Active Learning Classrooms

In brief

Active Learning Classrooms should:

- be flexible learning spaces equipped with moveable furniture to allow for different group formations and flexibility in class setup;
- include several whiteboards to facilitate documenting of individual and group work and sharing of ideas within and between groups; and
- be high-tech rooms to support collaborative, team-based learning.

On this page

About active learning classrooms

Active Learning Classrooms (ALC), also referred to as “smart classrooms” or “flexible classrooms”, are learning spaces that have been purposefully designed to engage students in the learning process and promote optimal conditions for active and collaborative teaching and learning.

Many classrooms still have fixed seating and tables that cannot be moved. If you are teaching in a traditional classroom or a lecture hall, you can still incorporate active learning techniques and activities that make it less likely for students to sit and passively listen throughout the entire lecture. Many active learning techniques, can be used in any classroom setting to allow students to move around and collaborate with others. You can also implement activities to engage students in discussion without having them leave their seats.

Although active learning can take place in any classroom, a classroom specifically designed for active learning is optimal because it provides a flexible space for a class to transition easily between a professor’s presentation and facilitated student group work.

Space Design for Active Learning Classrooms

Concordia’s active learning spaces are designed to support co-learning and the co-creation of knowledge to capitalize on the benefits of active learning fully. The common features of our active learning classrooms include:

1. flexible seating configurations;
2. shared writing surfaces; and
3. technology.

Flexible seating configurations

Furniture is an important component of the design of active learning classrooms. Desks and chairs are moveable, on rollers, and can be arranged in different ways to support many teaching strategies including individual work, group work, and front-of-room lectures and presentations. You can have a different layout depending on the activity you've got planned for your students. Moreover, the small, circular or rectangular tables that take up to 8 people, encourage students to communicate and work with each other and help create a community of learners.

Shared writing surfaces

Another special feature of these active learning classrooms is the shared writing surfaces. There are whiteboards placed around the rooms for students to visualize their ideas and plans, document their individual or group work, and share their work with the rest of the class. For example, if you pose a discussion question to the class, students could discuss the problem in small groups at their tables, and then write their collective ideas and answers on the whiteboards.

Technology

Concordia's active learning classrooms are also high-technology classrooms designed to facilitate collaboration through screen sharing, video conferencing, and digital presentation tools. Having access to these digital collaboration tools and software gives students a shared digital space to contribute ideas and help each other understand new material.

Instructors can also use the available lecture capture tools to record their lectures in order to provide their students with the option of repeating the lecture at their own pace and as many times as they need for an extra chance to digest new material.

Depending on the activity, you could be either using the classroom technologies or only using the flexible classroom setup and shared writing spaces as many active learning techniques do not always require the use of technology.

The following video, The classroom of tomorrow, provides an overview of the design and use of an Active Learning Classroom. This represents Concordia University's earliest efforts to construct an experimental Active Learning Classroom. This room was used as a model and scaled up for the design of other flexible classrooms and Active Learning Classrooms. For a variety of reasons, the room is now being used for other innovative learning projects.

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version of the text. You can view it online here:
https://opentextbooks.concordia.ca/active-learning/?p=24

Active learning classrooms at Concordia

The active learning classrooms have been designed to promote student engagement and peer collaboration. Extra whiteboards and mobile furniture make it easier to plan different classroom layouts so instructors and students can experiment with new activities. It's the ideal space for combining lectures with group work and active learning techniques. Another great feature of active learning classrooms is the technology. Setting up collaborative screen sharing is a snap. Students can show their work in groups using wireless displays so they never miss new opportunities to share and collaborate.

360-image tour of Concordia's active learning classrooms

H-601

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Note: This classroom number has been changed from H-603 to H-601.

H-605

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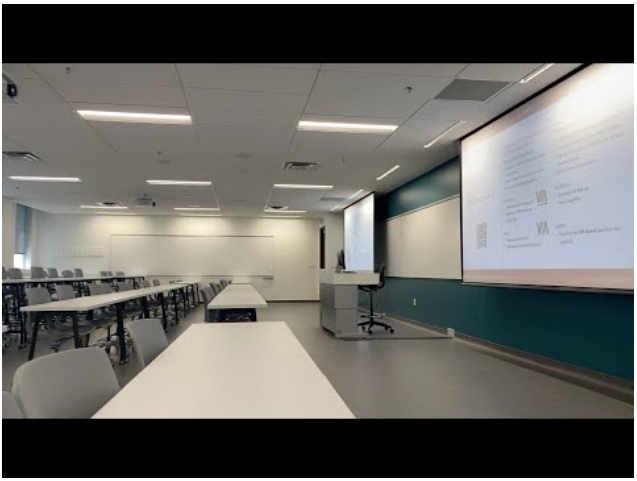
view it online here: https://opentextbooks.concordia.ca/active-learning/?p=24

Note: This classroom number has been changed from H-654 to H-670.

Bimodal classrooms and IT support

Concordia's new bimodal classrooms are specially equipped with desktop computers, microphones, cameras and overhead projectors. Instructors can connect to Moodle, Zoom, YuJa and Office 365 including Teams using the standard campus desktop login. The technology has been configured to allow for a quick, easy and convenient setup at the start of each class. Visit the IITS classroom information and support to learn more about the four categories of classrooms.



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PART II

IMPLEMENTING ACTIVE LEARNING

5. Tips for getting started with Active Learning in your class

In brief

To get started with Active Learning:

- Start small
- Explain why you are doing it
- Design activities that have a clear task
- Consider how you will form groups
- Prepare clear instructions
- Plan for transitions
- Plan for mishaps
- Use your time wisely
- Be flexible
- Don't give up if it does not go as planned

Inspired by Howard & Persky (2015).

Start small

Don't try to implement too many activities or anything complicated the first couple of times. Start with simple, low-

stakes techniques that are easy to implement (e.g., Think-Pair-Share or Buzz Groups). Once you feel confident, you can move on to more complex activities that require more steps and advance preparation.

Explain why you are doing it

Explain to students the benefits of active learning and that you are implementing it in order to deepen their learning. Tell them that students in classes that use this approach tend to get better grades – this should make them perk up in their seats! Students are sometimes reluctant to participate in these techniques for two main reasons: 1) some students believe they are paying good money for the expert (you) to tell them all the important knowledge, and that it will be transferred to them via the lecture, and 2) they are used to being passive in the classroom, and an active approach will force them to take on new roles. However, others will be familiar with and engage happily; they can be your change ambassadors!

Design activities that have a clear task

Make sure students have a goal to work towards. They need something to keep them focused whether they must come up with a solution, come to a consensus or generate a list to ensure there is a clear purpose to their activity.

Consider how you will form groups

If you plan to use groups, determine in advance how groups will be formed to save time. Do not be afraid to ask students

to change places. However, if you have a large class, it may be easier simply to assign groups by clusters of seats or by numbering students. Randomly assigning members to groups will make the groups more diverse and more productive, and less likely to cluster groups of friends (which can be more of a distraction). You may choose to design a system so that students are switching groups. This can help compensate for dominant and/or non-compliant students.

If you plan to do a lot of group work throughout the term, you may want to consider permanent groups. If you decide to have permanent groups, you can assign members based on certain criteria (i.e. knowledge of the topic, year of study, special skill, etc.) so they are balanced. In such groups, roles can be alternated weekly and students can keep a folder of their work (which you can collect and grade/check if you would like). You can also ask group members to grade each other's contributions as part of a participation grade for the course. Concordia's John Molson School of Business has a peer evaluation tool that is easy to use.

Prepare clear instructions

Instructions are crucial for students to succeed in a task. If instructions are not clear, many will sit around asking each other "what are we supposed to be doing?" and wasting precious class time on a logistical rather than a conceptual question. Writing clear instructions can be challenging; you should know in advance how exactly you plan to implement an activity. A good practice is to write down the instructions on a PowerPoint slide or in your notes. Written instructions are best so students can refer back to them throughout the activity, particularly if there are multiple steps. Even if it's just one question for discussion, write it on a slide or the board so students can refer to it as they think.

You should also provide clear parameters for the activity in your instructions. Consider: what resources can they consult and how much time do they have? You may want to start a timer on your computer to project so students can always see how much time they have left.

Very often it takes extra time for students to get organized before an activity and return to the plenary at the end of an activity. For this reason, you should plan for an extra few minutes of padding in your lesson around such activities.

Plan for transitions

It is also helpful to establish a signal that indicates that students should wrap up their discussions and turn their attention back to you. A simple gesture can be extremely helpful in managing chaos. This could be: ringing a bell or making another sound, holding your hand in the air, or turning the lights off and on again.

Plan for mishaps

Think about what could go wrong in the implementation. While it's impossible to think and plan for everything, some things are more likely. For example, if you are relying on technology, develop an alternative plan in the event the technology fails.

Use your time wisely

As the expert, this is your chance to check in with groups and interact with students on a smaller scale. Use this time to float

around the room and listen to students. Probe them to get them to dig deeper and help them unravel difficult concepts and make connections. This is your chance to get a glimpse into students' thinking and provide immediate and relevant feedback.

Be flexible

As you are implementing the activity, you might notice that it takes more time than anticipated or that the procedure needs to be tweaked slightly by adding a step. Don't be afraid to go "off-script." Follow your instincts and make a note for next time to avoid the same pitfall.

Don't give up if it does not go as planned

If an activity fails or does not go as planned, do not give up on the technique altogether. Reflect on the implementation and consider what could be tweaked to improve or adapt it in the future.

Resources and further reading

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6. Planning an Active Learning class

In brief

- Active learning techniques are easy to implement but still encourage students to think critically and independently.
- When designing an active learning activity in your course, first, it is important to carefully think about what you want your students to learn, then shape the activity to encourage this learning.

On this page

Organizing a lesson with Active Learning

In order to make the most of active learning, you will ideally be teaching in a classroom that has been designed and optimized

for this purpose. However, you can still use active learning techniques in a traditional classroom or auditorium by trying some of the more flexible active learning techniques such as think-pair-share and buzz groups. Strategies such as these can be used very easily in virtually any space. Refer to the Active Learning Techniques for a list and description of active learning techniques you can use in your classroom.

Research suggests that classes should be structured so that they are interspersed with activities instead of relying on the lecture alone. These activities should be varied and interactive. They should align with learning outcomes and assessments, and they must be *student-centred*, meaning they require effortful work by students in class-leading to higher-order thinking. How often and for how long will depend on the kinds of activities you use and your learning outcomes. There is no "right way" to do active learning; every class will look different, but below are some examples of how a class incorporating active learning could be structured.

Interactive lectures

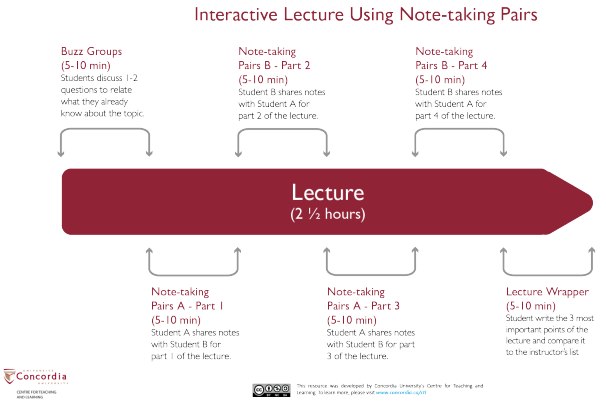
Using active learning does not necessarily require you to change the way you teach completely. If you have found success in lecturing, there are several techniques that you can use to enhance your lecture that will not require too much planning but will improve student engagement and promote learning.

One of the easiest ways to start using active learning is to intersperse small, meaningful activities into your lectures to make your lecture more interactive.

In the diagrams below, the timelines show that the main pedagogical approach is lecturing, but specific active learning strategies have been interspersed throughout the lecture to help students consolidate content and increase engagement.

These are only some examples of the way you can make your lectures more active, dynamic, and engaging.

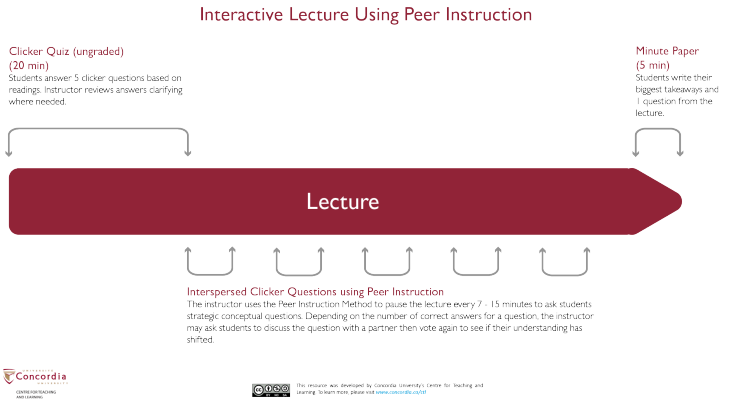
Interactive lecture using note-taking pairs



1. **Buzz Groups (5 – 10 minutes)**Students discuss 1-2 questions to relate what they already know about the topic.
2. **Note-taking Pairs A – Part 1 (5-10 min)**
   Student A shares notes with Student B for part 1 of the lecture.
3. **Note-taking Pairs B – Part 2 (5-10 min)**
   Student B shares notes with Student A for part 2 of the lecture.
4. **Note-taking Pairs A – Part 3 (5-10 min)**
   Student A shares notes with Student B for part 3 of the lecture.
5. **Note-taking Pairs B – Part 4 (5-10 min)**
   Student B shares notes with Student A for part 4 of the lecture.
6. **Lecture Wrapper (5-10 min)**

Students write the 3 most important points of the lecture and compare them to the instructor's list.

Interactive lecture using peer instruction



1. **Clicker Quiz (ungraded; 20 minutes)**
   Students answer 5 clicker questions based on readings. Instructor reviews answers clarifying where needed.
2. **Interspersed Clicker Questions Using Peer Instruction**
   The Instructor uses the Peer Instruction Method to pause the lecture every 7 – 15 minutes to ask students strategic conceptual questions. Depending on the number of correct answers to a question, the instructor may ask students to discuss the question with a partner and then vote again to see if their understanding has shifted.
3. **Minute Paper (5 minutes)**
   Students write their biggest takeaways and 1 question from the lecture.

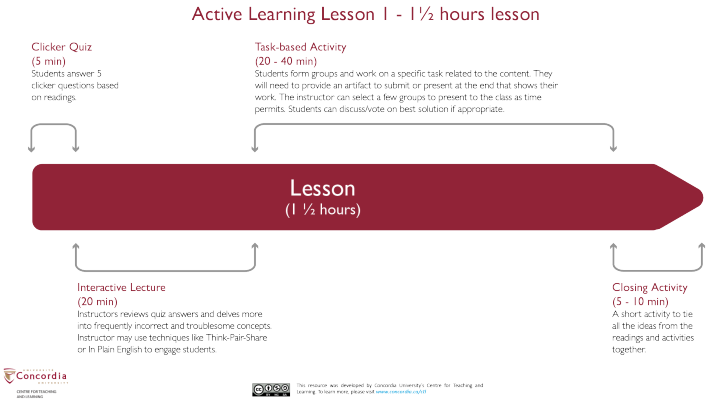
Active Learning with lessons

Some pedagogical approaches, such as the *flipped learning* approach, don't require as much lecturing. In this approach, the students spend more class time working through tasks while the instructor circulates and provides clarification when necessary. The students prepare for class in advance by reading or watching videos and come to class ready to consolidate and apply what they learned. Many instructors note the challenge of ensuring students prepare before class to be able to participate actively.

An alternative to the flipped approach would be a model where instructors alternate classes with lectures and an active learning lesson where students practice and apply content from the previous lecture.

The examples below provide examples of what a lesson with less lecturing might look like.

1 – 1.5 hour Active Learning lesson

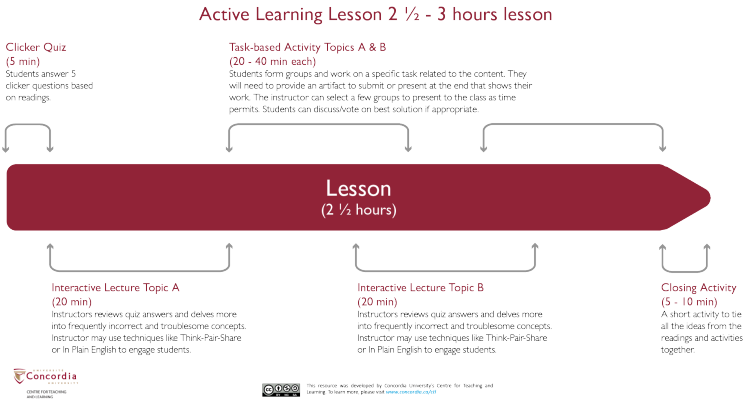


1. **Clicker Quiz (5 minutes)**

Students answer 5 clicker questions based on readings.

2. **Interactive Lecture (20 minutes)**
   The instructor reviews quiz answers and delves more into frequently incorrect and troublesome concepts. The instructor may use techniques like Think-Pair-Share or In Plain English to engage students.
3. **Task-based Activity (20 – 40 minutes)**
   Students form groups and work on a specific task related to the concept. They will need to provide an artifact to submit or present at the end that shows their work. The instructor can select a few groups to present to the class as time permits. Students can discuss/vote on the best solution if appropriate.
4. **Closing Activity (5 – 10 minutes)**
   A short activity to tie all the ideas from the readings and activities together.

2 ½ – 3 hours Active Learning lesson

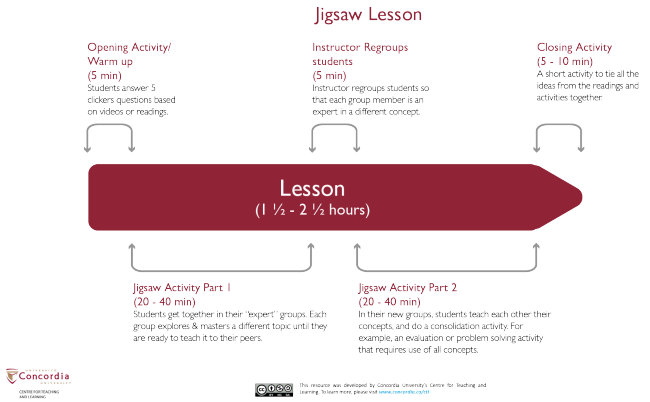


1. **Clicker Quiz (ungraded; 20 minutes)**
   Students answer 5 clicker questions based on readings.

Instructor reviews answers clarifying where needed.

2. **Interactive Lecture Topic A (20 minutes)**
   The instructor reviews quiz answers and delves more into frequently incorrect and troublesome concepts. The instructor may use techniques like Think-Pair-Share or in Plain English to engage students.
3. **Task-based Activity Topics A (20 minutes)**
   Students form groups and work on a specific task related to the concept. They will need to provide an artifact to submit or present at the end that shows their work. The instructor can select a few groups to present to the class as time permits. Students can discuss/vote on best solution if appropriate.
4. **Interactive Lecture Topic B**
   Students form groups and work on a specific task related to the concept. They will need to provide an artifact to submit or present at the end that shows their work. The instructor can select a few groups to present to the class as time permits. Students can discuss/vote on best solution if appropriate.
5. **Closing Activity (5 – 10 minutes)**
   A short activity to tie all the ideas from the readings and activities together.

Jigsaw lesson



1. **Opening Activity/Warm up (5 minutes)**
   Students answer 5 clicker questions based on videos or readings.
2. **Jigsaw Activity Part 1 (20 – 40 minutes each)**
   Students get together in their "expert" groups. Each group explores & masters a different topic until they are ready to teach it to their peers.
3. **Instructor Regroups Students (5 minutes)**
   Instructor regroups students so that each group member is an expert in a different concept.
4. **Jigsaw Activity Part 2 (20 – 40 minutes each)**
   In their new groups, students teach each other their concepts, and do a consolidation activity. For example, an evaluation or problem-solving activity that requires use of all concepts.
5. **Closing Activity (5 – 10 minutes)**
   A short activity to tie all the ideas from the readings and activities together.

PART III

ACTIVE LEARNING TECHNIQUES

7. Summary of Active Learning techniques

In brief

- There is a wide variety of active learning techniques that help develop different levels of knowledge and skills.
- Many of these techniques can be used with large classes and without much planning.

These techniques and many others have been originated by researchers from different disciplines whose studies on teaching and learning have culminated in a rich body of work. It provides clear and concise explanations and examples of a broad range of techniques along with primary resources for more information concerning original research and work on these techniques and many more.

Summary

Following is a summary of all the active learning techniques as a table.

Technique name	Description	Promoted skills
Contemporary Issues Journal	Students keep a journal where they connect course information to current news or their own lives.	Writing, Knowledge integration and synthesis
Fact or Opinion	Students distinguish facts from opinions in a text or a lecture.	Writing, Learning how to learn
Debate	An instructional approach is used to encourage discussion between two or more people who are positioned on opposite sides of an issue or topic.	Communications, Critical thinking, Argumentative skills, Research
Learning Cells	This is used to get students to ask and answer questions they develop themselves based on a reading or lecture.	Analysis and knowledge acquisition
Think-Pair-Share	Students take time on their own to consider a question, then with a partner and, optionally, after with the entire class.	Analysis and critical thinking, Knowledge integration and synthesis
Lecture Wrapper	At the end of a lecture, students identify the 3 most important points/ big ideas and compare them to the instructor's list.	Self-regulated learning
Peer Instruction	Students use a response system (i.e. clickers) to answer questions.	Communication skills, Conceptual and evaluative reasoning
Analytical Teams	Students are put into groups, and each member is assigned a role.	Critical and creative thinking, Problem-solving, Learning how to learn

Buzz Groups	Students brainstorm or discuss a question or problem in small groups.	Analysis and critical thinking, problem-solving
Jigsaw	Students master content in small “expert” groups then reform into new groups (with one person from a different expert group) and teach each other what they learned in their previous groups.	Analysis and critical thinking, Learning how to learn
Advance Organizers	Instructors provide a template for taking lecture/reading notes to help them organize their notes and help them focus on big ideas and connections between them.	Active listening, Understanding
Guided Notes	Instructors provide a set of partially-completed notes that students complete while listening to help them focus on the key concepts presented in the lecture.	Active listening, Understanding
Note-Taking Pairs	Students take turns sharing notes with a partner at intervals in a lecture.	Understanding, Writing, Organization skills
Fishbowl	A group of volunteer students have a debate, do a role-play or perform a specific task in front of the class. The rest of the class watches and discusses at the end.	Analysis and critical thinking, Knowledge integration and synthesis

Three-Minute Message	Students present a concise three-minute argument with supporting evidence on a designated course topic.	Creative and critical thinking, Problem-solving
Translate That!	An instructor pauses at regular intervals in a lecture and asks a student in the class to explain the previous segment in “plain English” to their classmates.	Analysis, Critical and Creative thinking
Case Studies	Students (individually, in pairs or in groups) analyze an authentic scenario and apply course ideas to provide a solution.	Inductive and analytical reasoning, Knowledge integration
Problem-Based Learning	An instructional approach wherein students learn through the direct experience of solving problems (SALTISE).	Self-regulated learning, Content analysis, Application of knowledge
Think-aloud Pair Problem-solving	In pairs, students take turns listening while the other explains their solution and reasoning to a given problem.	Active listening, Knowledge application
Directed Paraphrase	Students craft a concise explanation of a difficult course concept in their own words for a specific audience.	Promotes: Content analysis, Understanding

Insights-Resources-Application (IRAs)	In response to a lecture or reading, students: explain insights they've gained, identify an additional resource that has similar themes, and write how the reading applies to their own personal experience.	Understanding, Critical thinking, Learning how to learn
Reflective Writing	An instructional strategy to encourage students to engage on a deeper level with course learning material.	Knowledge organization, Self-regulated learning
Concept Mapping	An instructional approach to visually show the relationships between and among different concepts (SALTISE).	Knowledge organization and integration, Relational reasoning
Group Grid	Students sort course concepts into categories on an instructor-generated grid.	Knowledge integration and synthesis, Learning how to learn
Sketch Notes	Students create a visual representation of lecture content.	Critical and creative thinking, Knowledge integration and synthesis

Resources

Barkley, E., & Major, C. (n.d.). *The K. Patricia Cross Academy*. Retrieved Dec 6, 2022, from https://kpcrossacademy.org/.

Barkley, E. F., Cross, K. P., & Major, C. H. (2014). *Collaborative*

learning techniques: A handbook for college faculty. John Wiley & Sons.

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Loadman, N. (2016, Jul 10). *Punctuated Lectures: Classroom Assessment Technique*. YouTube. Retrieved Dec 6, 2022, from https://www.youtube.com/watch?v=AttIxRWxYF4.

University of Toronto Centre for Teaching Support & Innovation. (n.d.). Active Learning and Adapting Teaching Techniques. Retrieved Dec 6, 2022, from https://tatp.utoronto.ca/wp-content/uploads/sites/2/Active-Learning-and-Adapting-Teaching-Techniques1.pdf.

8. Critical thinking

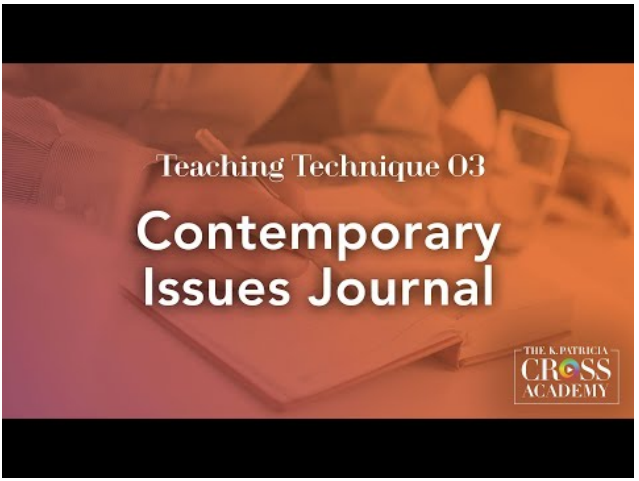
On this page

Contemporary Issues Journal

Students keep a journal where they connect course information to current news or their own lives.

Promotes: Writing, Knowledge integration and synthesis

Contemporary Issues Journal Teaching Technique – Video & materials (K. Patricia Cross Academy).



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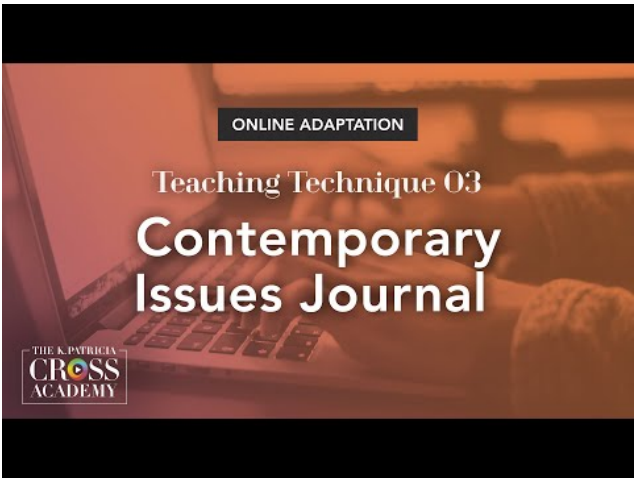
Adapting Contemporary Issues Journal for Online Teaching – Video (K. Patricia Cross Academy).



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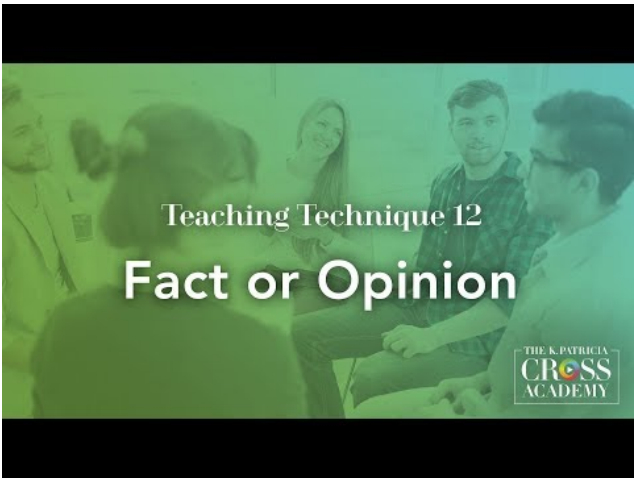
Fact or Opinion

Students identify what is fact and what is an opinion from a reading or lecture.

Promotes: Writing, Learning how to learn

Fact or Opinion Teaching Technique – Video & materials (K. Patricia Cross)



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9. Discussion

On this page

Debate

An instructional approach used to encourage discussion between two or more people who are positioned on opposite sides of an issue or topic.

Promotes: Communications, Critical thinking, Argumentative skills, Research

- About Debate (SALTISE)
- Debate Active Learning Activities (SALTISE)
- Tips on running debates in your classroom – Video (Harvard University)

Learning Cells

This is used to get students to ask and answer questions they develop themselves based on a reading or lecture.

Promotes: Analysis and knowledge acquisition

Learning cells is a technique used to get students to ask and answer questions they develop themselves based on a reading or lecture.

To prepare, students listen to the lecture or do the assigned reading and write questions they have about the material. In class, students work in pairs and ask each other their questions while the instructor circulates giving feedback and clarifying when appropriate.

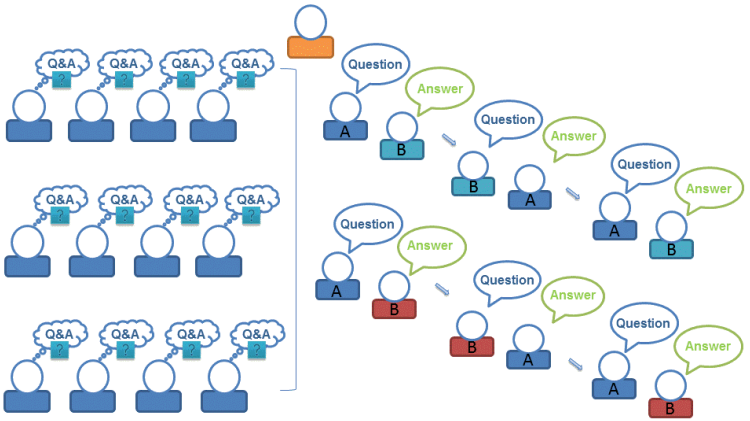

Diagram representing learning cells

Diagram representing learning cells

Think-Pair-Share

Students take time on their own to consider a question, then with a partner and, optionally, after with the entire class.

Promotes: Analysis and critical thinking, Knowledge integration and synthesis

Think-pair-share Teaching Technique – Video & materials (K. Patricia Cross Academy).

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Adapting Think-Pair-Share for Online Teaching – Video (K. Patricia Cross Academy).

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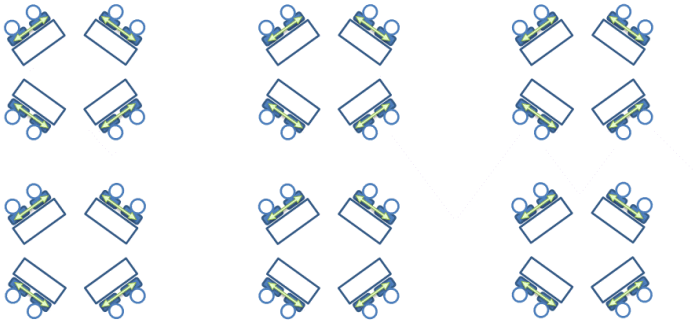
Think-pair-share is an active learning technique that encourages peer-to-peer collaboration and opportunities for creating a greater sense of classroom community. Students are given a single question to briefly think about individually. They are then asked to share and discuss this question with a partner seated next to them. This paired discussion can then be followed by a full class discussion so that the class can benefit from a wider range of answers and a more comprehensive exploration of the questions. This technique provides opportunities for clarifying misinformation and prompts critical reflection.



Think-Pair-Share with a flexible classroom.

10. Engaged learning

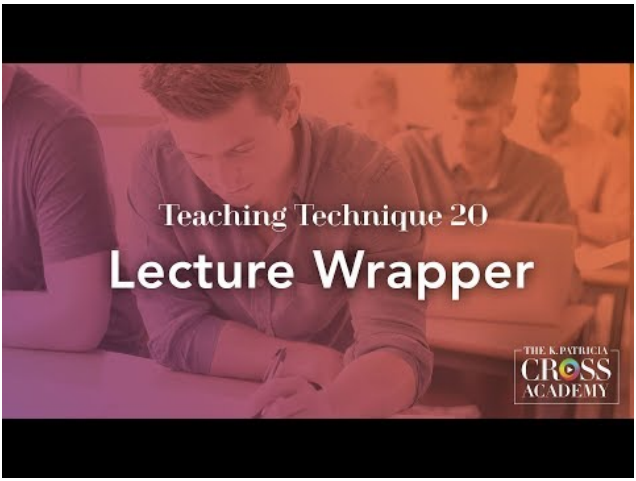
On this page

Lecture Wrapper

At the end of a lecture, students identify the 3 most important points/big ideas and compare it to the instructor's list.

Promotes: Self-regulated learning

Lecture Wrapper Teaching Technique – Video & materials (K. Patricia Cross Academy).



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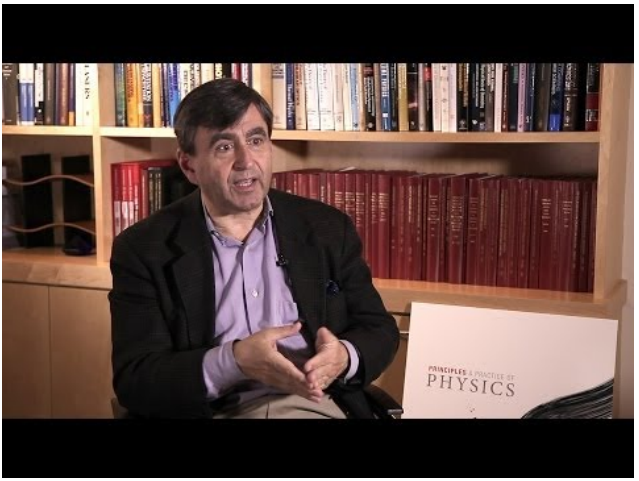
Peer Instruction

Students use a response system (i.e. clickers) to answer questions. After voting, they explain their answer to a partner and then vote again. Typically, the second round of voting sees better results as students learn from their peers.

Promotes: Communication skills, Conceptual and evaluative reasoning

- About Peer Instruction (SALTISE)
- Peer Instruction Active Learning Activities (SALTISE)
- Peer Instruction for Active Learning – Video by Prof. Eric Mazur (Harvard University)



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11. Group work and team work

On this page

Analytical Teams

Students are put into groups, and each member is assigned a role. Each role is a component of a complete analysis (i.e. Arguments for, arguments against, examples, opinions, etc.).

Promotes: Critical and creative thinking, Problem solving, Learning how to learn

Analytic Teams Teaching Technique – Video & materials (K. Patricia Cross Academy)

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Adapting Analytic Teams for Online Teaching – Video (K. Patricia Cross Academy).

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Buzz Groups

Students brainstorm or discuss a question or problem in small groups.

Promotes: Analysis and critical thinking, problem-solving

Buzz Groups can be done in large auditoriums or regular classrooms with very little preparation. The main benefit of buzz groups is that you can rapidly create group configurations of four so that the students are immediately engaged in responding to questions or problems you present throughout the class. By simply calling out assigned lettering and numbering of rows, students can conveniently identify which

group they belong to so they can begin dialoguing with each other quickly with minimal confusion or delay.

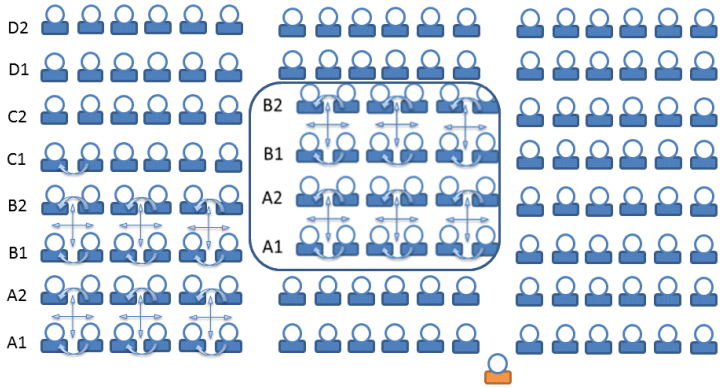

Diagram of buzz groups active learning technique.

Jigsaw

Students master content in small “expert” groups then reform into new groups (with one person from a different expert group) and teach each other what they learned in their previous groups.

Promotes: Analysis and critical thinking, Learning how to learn

- About Jigsaw (SALTISE).
- Jigsaw Active Learning Activities (SALTISE).

Jigsaw Teaching Technique – Video & materials (K. Patricia Cross Academy).

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Adapting Jigsaw for Online Teaching – Video (K. Patricia Cross Academy).

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Using Jigsaw with Texts (Social Science) – Video (Harvard University).

12. Note-taking

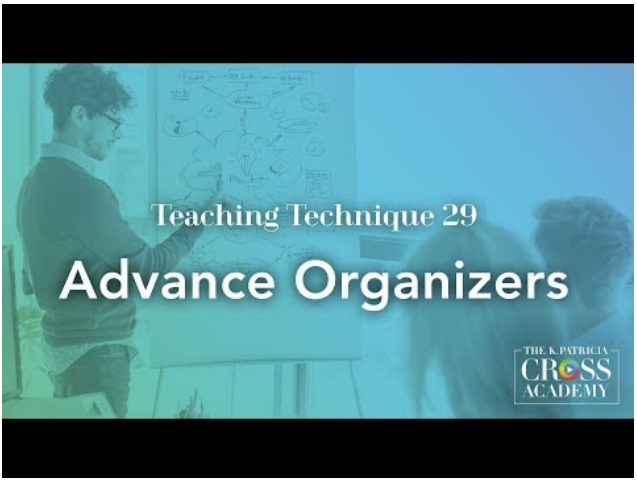
On this page

Advance Organizers

Instructors provide a template for taking lecture/reading notes to help them organize their notes and help them focus on big ideas and connections between them.

Promotes: Active listening, Understanding

Advance Organizers Teaching Technique – Video & materials (K. Patricia Cross Academy).



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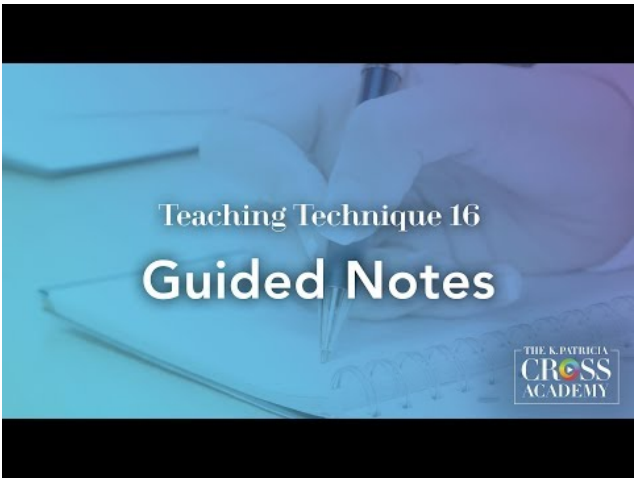
Guided Notes

Instructors provide a set of partially-completed notes that students complete while listening to help them focus on the key concepts presented in the lecture.

Promotes: Active listening, Understanding

Guided Notes Teaching Technique – Video & materials (K. Patricia Cross Academy).



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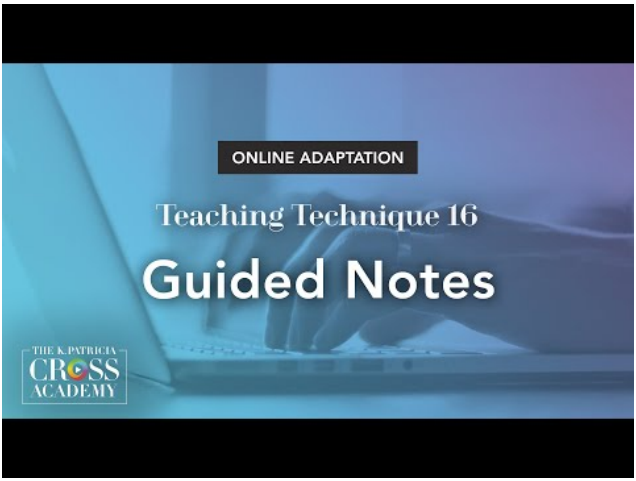
Adapting Guided Notes for Online Teaching – Video (K. Patricia Cross Academy).



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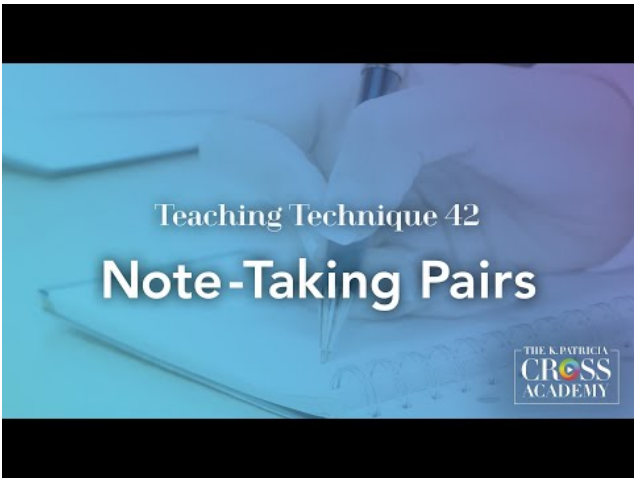
Note-Taking Pairs

Students take turns sharing notes with a partner at intervals in a lecture.

Promotes: Understanding, Writing, Organization skills

Note-Taking Pairs Teaching Technique – Video & materials (K. Patricia Cross Academy).



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Note-taking pairs allows students to take turns sharing notes after mini-lectures of approximately 10 to 15 minutes. It works like this:

1. Students listen to the first portion of a lecture around one major concept (approximately 20 minutes) while taking notes.
2. Student A shares their notes with Student B, and they work together to fill in any gaps (approximately 5 minutes).
3. The lesson returns to a lecture format, and students continue taking notes around a new concept.
4. Next, the role between students is reversed. Student B is asked to present their notes from the most recent segment of lecturing to Student A.

5. Keep repeating this cycle until the end of the lecture.

In this manner, students become the pedagogues teaching each other and reviewing the content at the same time. Cycling through a process like this that combines lecturing, as the passive delivery mode of information, with collaboration and practice, through summarization and explanation of notes, effectively combines the transmission of information with more engaging peer-to-peer interactions.

This technique is especially good for large, first-year survey courses and is ideally suited to help students practice note-taking strategies. And, it does not require any advanced preparation and can be applied in nearly all disciplines.

13. Presentations

On this page

Fishbowl

A group of volunteer students have a debate, do a roleplay or perform a specific task in front of the class. The rest of the class watches and discusses at the end.

Promotes: Analysis and critical thinking, Knowledge integration and synthesis

Fishbowl Teaching Technique – Video (K. Patricia Cross Academy).

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Adapting Fishbowl for Online Teaching – Video (K. Patricia Cross Academy).

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The Fishbowl technique is another popular active learning technique that allows students to practice active listening and debate. Two students or groups of students position themselves in the centre or front of the room to engage in a debate, discussion or role-play while students on the periphery are tasked with listening to the debate and deciding on which of the two sides was the most compelling and convincing. At the end of the session, the whole class comes together and a large group discussion follows as a way of summarizing key points and findings.

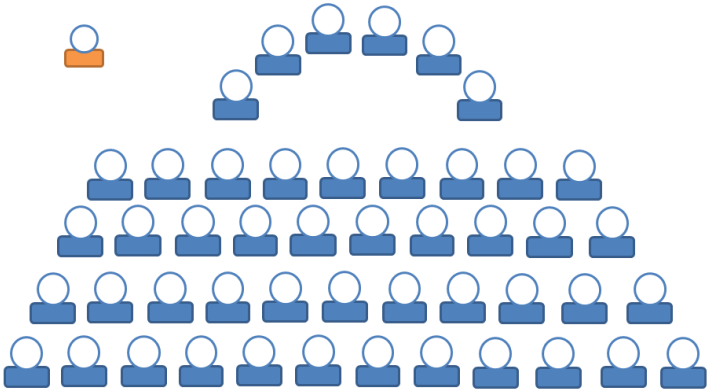

Diagram of fishbowl active learning technique in a fixed classroom.

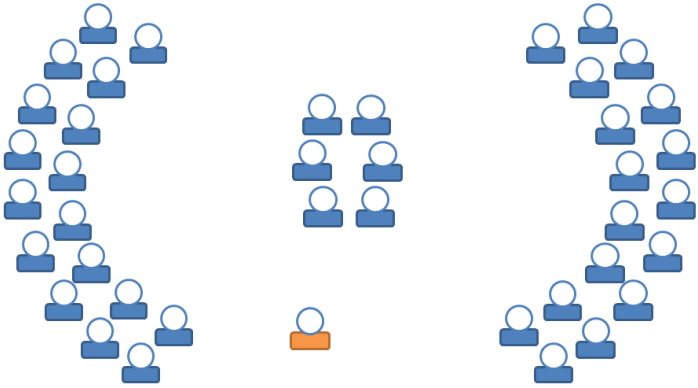

Diagram of fishbowl active learning technique in a flexible classroom.

Three-Minute Message

Students present a concise three-minute argument with supporting evidence on a designated course topic.

Promotes: Creative and critical thinking, Problem solving

Three-Minute Message Teaching Technique – Video & materials (K. Patricia Cross Academy).

A YouTube element has been excluded from this version of the text. You can view it online here: https://opentextbooks.concordia.ca/active-learning/?p=73

Adapting Three-Minute Message for Online Teaching – Video (K. Patricia Cross Academy).

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Translate That!

An instructor pauses at regular intervals in a lecture and asks a student in the class to explain the previous segment in "plain English" to their classmates.

Promotes: Analysis, Critical and creative thinking

Translate That! Teaching Techniques – Video & materials (K. Patricia Cross Academy).

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Adapting Translate That! for Online Teaching – Video (K. Patricia Cross Academy).

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14. Problem-solving

On this page

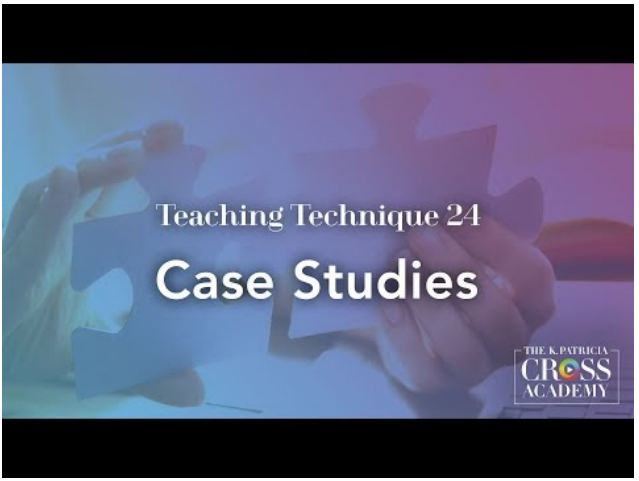
Case Studies

Students (individually, in pairs or groups) analyze an authentic scenario and apply course ideas to provide a solution.

Promotes: Inductive and analytical reasoning, Knowledge integration

- About Case Studies (SALTISE)
- Case Studies Active Learning Activities (SALTISE)

Case Studies Teaching Technique – Video & materials (K. Patricia Cross Academy)



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Adapting Case Studies for Online Teaching – Video (K. Patricia Cross Academy)

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Teaching by Case Study – Video (Stanford University)

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The Case Study Method for Advanced Teacher Education – Video (National Academy of Advanced Teacher Education)

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Problem-based Learning

An instructional approach wherein students learn through the direct experience of solving problems (SALTISE).

Promotes: Self-regulated learning, Content analysis, Application of knowledge

- About Problem-based Learning (SALTISE)
- Problem-based learning Active Learning Activities (SALTISE).

Problem-Based Learning (How it works & why it is used) – Video (Maastricht University, Netherlands)

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Introduction to Problem Based Learning Curriculum (Science) – Video (Rowan University, School of Osteopathic Medicine)

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Different variations

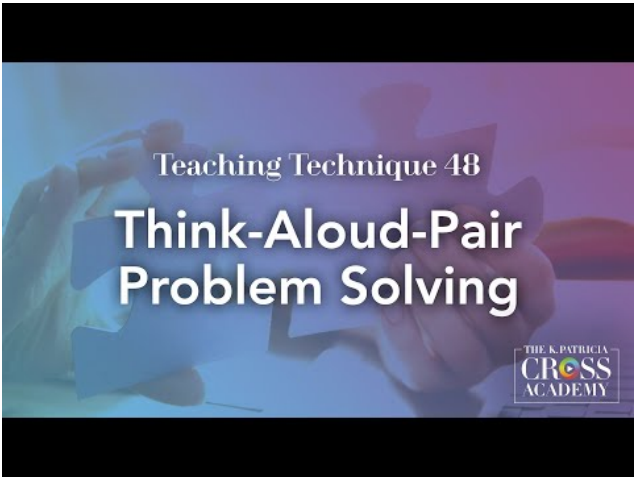
- Documented Problem solving – Students keep track of the steps they take as they solve a problem (SERC, Carlton College).
- Structured Problem Solving – Students work in teams to use a specific process to solve a complex problem (University of Toronto).

Think-aloud Pair Problem-solving

In pairs, students take turns listening while the other explains their solution and reasoning to a given problem.

Promotes: Active listening, Knowledge application

Think-Aloud-Pair Problem Solving Teaching Technique – Video & materials (K. Patricia Cross Academy)



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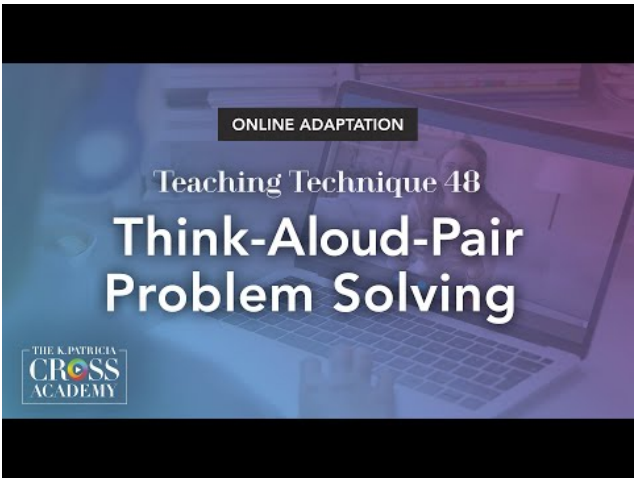
Adapting Think-Aloud-Pair Problem Solving for Online Teaching – Video (K. Patricia Cross Academy)



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Think-Aloud-Pair-Problem Solving is a technique that allows students to work in pairs using a turn-based approach.

The instructor begins by presenting a problem or asking students to think of a problem, which they must solve. Taking turns, ***Student A*** presents the problem to their partner and explains their proposed solutions based on theory and assumptions. ***Student B*** is tasked with active listening, responding at the end of the explanation with feedback and comments to validate the solution or address any errors or imprecisions. These roles are then reversed, so that ***Student B*** presents a new problem followed by the problem solving expression and ***Student A*** engages in active listening followed by feedback and comments in response to the explanation.

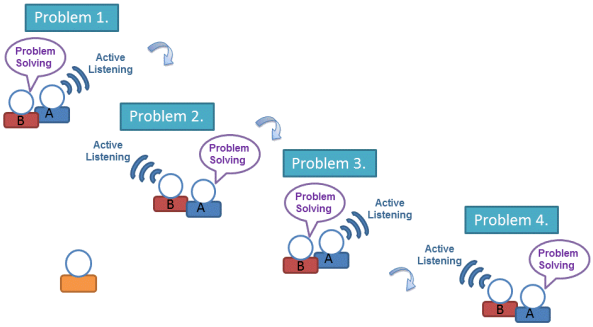

Diagram of think-aloud pair problem-solving active learning technique.

15. Writing analysis

On this page

Directed Paraphrase

Students craft a concise explanation of a difficult course concept in their own words for a specific audience.

Promotes: Content analysis, Understanding

- About Directed Paraphrasing (Pennsylvania State University)

Insights-Resources-Application (IRAs)

In response to a lecture or reading, students: explain insights they've gained, identify an additional resource that has similar themes, and write how the reading applies to their own personal experience.

Promotes: Understanding, Critical thinking, Learning how to learn

IRAs Teaching Technique – Video & materials (K. Patricia Cross Academy).

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Adapting IRAs for Online Teaching – Video (K. Patricia Cross Academy).

A YouTube element has been excluded from this version of the text. You can view it online here: https://opentextbooks.concordia.ca/active-learning/?p=77

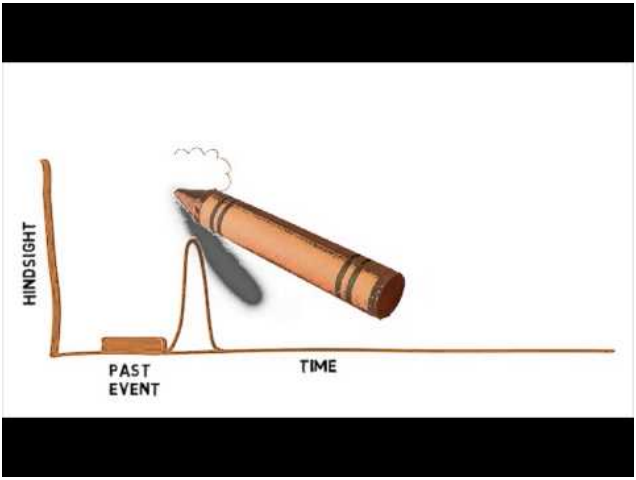
Reflective Writing

An instructional strategy to encourage students to engage on a deeper level with course learning material.

Promotes: Knowledge organization, Self-regulated learning

- About Reflective Writing (SALTISE)
- Reflective Writing on Waves (SALTISE).

Benefits of Reflective Writing – Video (Skills Team: University of Hull, UK)



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16. Graphic organizers

On this page

Concept Mapping

An instructional approach to visually show the relationships between and among different concepts (SALTISE).

Promotes: Knowledge organization and integration, Relational reasoning

- About Concept Mapping (SALTISE)
- Concept Mapping Active Learning Activities (SALTISE)

Classroom Assessment Technique: Concept Maps – Video by Dr. Karen Rohrbauck Stout, (Center for Instructional Innovation and Assessment, Western Washington University)

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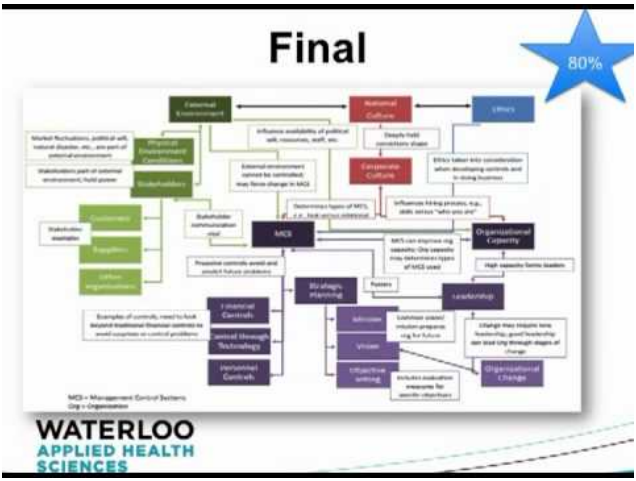
Concept Mapping for Learning, Reflection, and Evaluation – Video by Professor Josephine McMurray (Health Studies and Gerontology, University of Waterloo)



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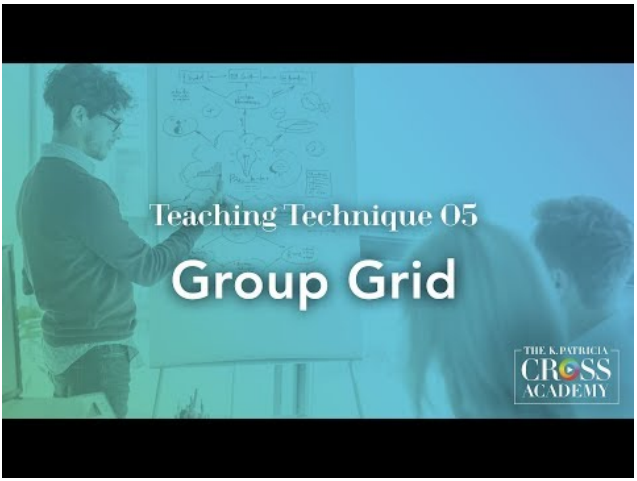
Group Grid

Students sort course concepts into categories on an instructor-generated grid.

Promotes: Knowledge integration and synthesis, Learning how to learn

Group Grid Teaching Technique – Video & materials (K. Patricia Cross Academy).



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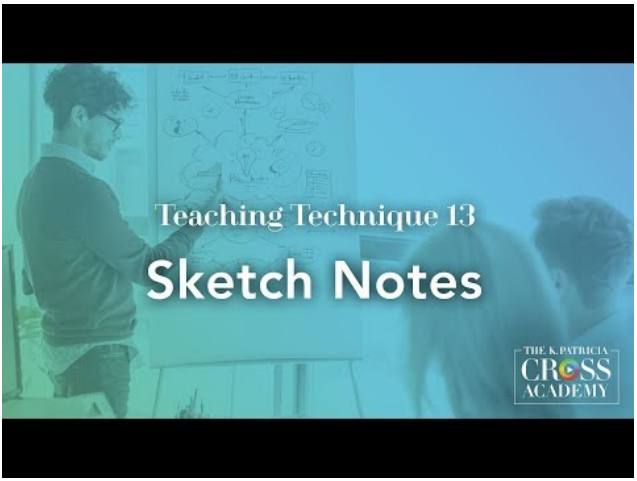
Sketch Notes

Students create a visual representation of lecture content.

Promotes: Critical and creative thinking, Knowledge integration and synthesis

Sketch Notes Teaching Technique – Video & materials (K. Patricia Cross Academy).



A YouTube element has been excluded from this version of the text. You can view it online here: https://opentextbooks.concordia.ca/active-learning/?p=80

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