# Active Learning Strategies

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These active learning strategies will help you design engaging, interactive, and effective learning experiences which can be adapted to many classrooms and sets of learners. Most can be used with both large and small groups in different configurations. Most also include time for individual reflection, which is an important aspect of active learning. This brief overview includes short executive summaries of each activity as well as detailed instructions, variations, and extensions that can be adopted by almost any instructor in any discipline.

## Active Learners are Prepared Learners

Here are three things you should try to do before adapting any of these activities in your classroom:

1. **Build up students’ comfort level**. For many students, active learning is an unfamiliar and possibly uncomfortable experience. Passive learning is safe. Active learning involves taking risks. Start small and simple and build up students’ comfort level with active learning (and with each other) through fun [icebreakers](https://ucat.osu.edu/bookshelf/teaching-topics/shaping-a-positive-learning-environment/12-icebreakers-college-classroom/), team or community-building exercises, and activities where they are encouraged to [mix and mingle](http://www.liberatingstructures.com/2-impromptu-networking/) with their peers. Many of the activities listed here can fulfil these functions. Remind students that learning can—and should—be fun!
2. **If you are planning to use groups, think carefully about how they will be formed**. Many of the activities here ask you to organize students into pairs/groups of 2–7. How will you do that in a way that is fair, equitable, and transparent? Will students self-select their groups? Will groups be randomized? Or will you have specific, objective criteria? Generally, groups that include a mix of abilities, backgrounds, and demographics will work well. An objective criterion could simply mean numbering students sequentially (1, 2, 3, 4, 5, 1, 2, 3, 4, 5, etc.) and then asking all the “ones” to form a group, all the “twos” and so on. [Check out some of the ideas here](https://www.teachhub.com/classroom-management/2019/09/30-ways-to-arrange-students-for-group-work/). [See here for more about preparing for group work in the classroom](https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/alternatives-lecturing/group-work/implementing-group-work-classroom).
3. **Build on a shared experience**. For most active learning strategies to be effective, students need a common experience on which to draw. This could be an assigned reading, video, lecture, podcast, field trip, guest speaker, etc. Think of this as the “content” portion of your class or preparations before class in a flipped classroom.

## Planning and Reflecting on Your Active Learning Adventures

These strategies are simple to implement. They are also most effective when carefully planned and repeated multiple times. Considering the following questions will help you to plan for success and to reflect on ways to improve each iteration of the activity.

### Planning

1. What is the context? E.g., course, subject, level, experience, number and diversity of students, time of semester, time of day, duration of class period, etc.
2. What is the intended learning outcome? In other words, what do you want learners to know, feel, or be able to do after this experience?
3. Which strategy will you use? Why? How will it help you achieve the intended learning outcome?
4. How will you [assess](https://cft.vanderbilt.edu/guides-sub-pages/cats/) whether learners achieve the intended learning outcome?

### Reflecting

1. Did learners achieve the intended learning outcome? Why or why not? What were their keys to success? What barriers prevented them from succeeding?
2. Were your instructions clear? Did you have to provide a lot of additional explanations or were learners able to grasp the process from the outset? How could you make instructions clearer?
3. Did you provide enough time for the activity? Too much time?

# Active Learning Strategies

[Think-Pair-Share](#_Think-Pair-Share)

[Numbered Heads Together](#_Numbered_Heads_Together)

[Around the World](#_Around_the_World)

[Jigsaw (x3)](#_Jigsaw_(Three_Versions))

[Pictionary](#_Pictionary)

[Collaborative Concept Mapping](#_Collaborative_Concept_Mapping)

[4-S Application Activities](#_4-S_Application_Activities)

## Think-Pair-Share

This is a popular and versatile active learning strategy that should be in every instructor’s toolkit. It provides opportunities for individual reflection, collaboration, and feedback. Provide students with a prompt or question. Give them time on their own to think about it. Ask them to share their responses with a partner. Ask for volunteers to share key takeaways with the class.

### Steps

1. Provide students with a question or prompt based on their shared experience, e.g., reading, lecture, personal experience, etc. For example: “What is the most important point you took away from the reading for today?” **Pro Tip!** If they know they will be doing this regularly, and they know it factors into their participation grade, it provides an incentive to prepare for class.
2. Give students a specific and sufficient amount of time to think about the question. Provide clear expectations for what they should do during this time. E.g., “Sitting quietly, without speaking, spend one minute considering this question. Use this time to refer to your notes on the reading if necessary. Write down your answer and rationale on a piece of paper.”
3. After thinking time is up, ask students to pair up and discuss their answers or reactions to the question. You may also want to ask them to share their rationale, where and how they found their answer, why it is relevant, etc.
4. Ask for volunteers to share with the class what they discussed with their partner.
	1. Ask for highlights from the conversation rather than a repetition or summary.
	2. Facilitate a discussion by asking students to speak to the class, not to you.
	3. Raise additional questions or point out common themes as they arise.
	4. Rather than focussing on a correct answer (if there is one) highlight effective reasoning, thought processes, and evidence provided. This can help some students to speak up when they know they will get feedback on their reasoning and not just whether they got the “correct” answer.

### Variations and Additions

* Call it a “Write-Pair-Share” if you want to emphasize they take notes in addition to thinking.
* Provide prompts before class so those who want to can take more time to consider the question. For example: “Here are some questions we will be discussing in class. Please bring your notes with you to class.”
* Instead of asking for volunteers, use a tool like [Wheel Decide](https://wheeldecide.com/) to pick who will share.
* Think-Pair-Share can be easily combined with [Classroom Assessment Techniques](https://www.uky.edu/celt/50-classroom-assessment-techniques-cats) such as Process Review, Most Important Point, Muddiest Point, etc.
* Think-Pair-Share can also be combined or elaborated with [Liberating Structures](http://www.liberatingstructures.com) like Impromptu Networking and 1-2-4-All.

## Numbered Heads Together

This strategy is great for encouraging collaboration and for getting different students to speak up in class. Give each student in a group a number and then give the class a question to discuss in their groups. When you want to hear what they come up with, say “All ‘1s’ please stand up!”

### Steps

1. Divide the class into groups and give each group member a different number.
2. Tell them the purpose of their number. For example: “I will give you time in your group to discuss the question and when the time is up, I will call on everyone with the same number to share on behalf of their group.”
3. Ask the group a question and give them a specific amount of time to discuss their answers. A multiple choice or true/false question can make it easier for groups to narrow their choices and focus their discussion. This also makes it easier for them to present their responses.
4. When the time is up, ask all students with the same number to stand up. For example, “All ‘1s’ please stand up!”
5. Ask, on a count of 3, for standing students to state loudly, clearly, and simultaneously their group’s answer to the question.
6. Ask the representatives to share their reasons for their group’s answer. Afterward, other members of the group can add on. Facilitate a discussion with the rest of the class. Point out when several groups have the same answer or comment on how each group responded differently. Prompt groups to debate their responses with each other rather than looking to you for the correct answer. See additional strategies in Think-Pair-Share (4a).

### Variations and Added Benefits

* Add more time to step 2 and ask that they not just decide on an answer but also write out their top three points or examples to support their answer.
* Instead of asking them to say the answer aloud, use answer cards. Use cue cards or sheets of paper with printed answers on them (A/B/C/D/E; True/False).
* This strategy is especially useful with multiple choice questions where there is more than one reasonable response, or even multiple correct answers because groups need to defend their rational and they get to see alternative responses.
* Another added benefit is that the typically more talkative students still get a chance to contribute, but they will not always be the ones to report back to the class.
* Quieter or less confident speakers get a chance to talk in a small group first before having to speak in front of the whole class. They can confirm their position and get feedback from their group. They are also not being put on the spot to say what they personally think, but they are speaking on behalf of their group.

## Around the World

Get students collaborating to solve problems. Each group contributes to a series of problems before returning “home” to revisit their original problem.

### Steps

1. Using whiteboards or flipcharts, put up a series of problems or questions at stations spread around the classroom. The number of stastions should correspond to the number of groups you anticipate having in the class.
2. Arrange students into groups (3 or 4 per group) and give each group a different-coloured pen or marker. Make sure you have enough colours so that each group gets something different!
3. Ask each group to move to a station and start trying to solve the problem. Emphasize that you need to see not just their answers but also their reasoning and the steps they take.
4. Provide a specific amount of time for them to work on the problem at that station. **Pro Tip!** How long should it take to solve the problem? Divide that time by the number of groups so that you have each group working on only a portion of the problem. E.g., if a problem should take about ten minutes, give them two minutes before asking them to switch to the next station.
5. Once the allotted time is up, ask groups to move to the next station and take their pen/marker with them. Colours stay with the group (not the station) so that each group’s work is visible.
6. When they get to the next station, ask groups to begin by assessing and commenting on what the group(s) ahead of them accomplished. Tell them not to erase anything, but to circle, cross-out, or put question marks beside anything they believe is incorrect or unclear and to provide an explanation. Then continue working on the problem. **Pro Tip!** If using paper or flip charts, provide groups with sticky notes they can use to make and move around comments.
7. Have groups continue “around the world” to each station so they get a chance to work on each problem before returning to their home station.
8. Direct them to finish or review the completed problem at their home station.

### Variations and Add-ons

* When creating groups and passing out markers, assign the “scribe” role to a student who you know to be a little quieter or perhaps unprepared. This helps to make sure they stay involved in the conversation.
* Conversely, you could make the talkative person in the group the scribe, but tell them they’re not allowed to speak, only to write down what their groupmates say.
* Use smaller groups (3–4, rather than 5–7) so that students are not too crowded at each station.
* Have each group present the correct solution at their home station to the rest of the class.
* Direct them to highlight the steps they took and the best methods used to solve the problem.
* Support groups by emphasizing things they did correctly but try not to steal their thunder by reviewing everything yourself; let them be the experts.
* Allow students time to take pictures of each problem/solution so they can use them for later review/studying. Alternatively, you could take pictures yourself and post them to eLearn.
* When moving from station to station, ask groups to move counterclockwise. Point out that this is Squamish protocol for a talking circle. Use this as an opportunity to reflect on Indigenization.

## Jigsaw (Three Versions)

Jigsaw is another popular and versatile active learning strategy that can serve different functions. A problem, question, or series of questions are divided between students. Learners become “experts” on a different part of the problem and share their expertise to help teach others.

### Version 1

1. Arrange students in groups of 4 to 6. The size of groups should ideally correspond to the number of components in the task.
2. Assign a separate task to each member of the group. For example, say the overall task is to describe the four parts of a cell. In a group of four, one student could study the membrane, one cytoplasm, one ribosome, and one DNA.
3. Ask students report back to their group. As a group, they put together the components of the problem. For example, to describe how the parts of a cell work together, or solve a problem related to the functioning of a cell.
4. Have one group present their findings back to the class, discuss and compare solutions.
	1. Variation: Have each group solve a different problem (e.g., related to the parts of a cell) and then compare how the parts of a cell worked in each problem.

### Version 2

1. Create “home” groups of 4 to 6 students.
2. Have one student from each home group join an “expert” group.
3. Get each expert group to work on one component of a larger problem.
4. After the expert groups are finished with their work, ask students return to their home groups.
5. Guide students to combine their knowledge or analyses in home groups to form a whole.
6. Direct home groups to present their interpretation to the rest of the class. Facilitate a discussion or debate and get students to explain their reasoning.

Figure 1 – Home Groups

**Group 1**

|  |  |
| --- | --- |
| **A** | **B** |
| **C** | **D** |
| **E** | **F** |

**Group 6**

|  |  |
| --- | --- |
| **A** | **B** |
| **C** | **D** |
| **E** | **F** |

**Group 5**

|  |  |
| --- | --- |
| **A** | **B** |
| **C** | **D** |
| **E** | **F** |

**Group 4**

|  |  |
| --- | --- |
| **A** | **B** |
| **C** | **D** |
| **E** | **F** |

**Group 3**

|  |  |
| --- | --- |
| **A** | **B** |
| **C** | **D** |
| **E** | **F** |

**Group 2**

|  |  |
| --- | --- |
| **A** | **B** |
| **C** | **D** |
| **E** | **F** |

Figure 2 – Expert Groups

**Group A**

|  |  |
| --- | --- |
| **A** | **A** |
| **A** | **A** |
| **A** | **A** |

**Group B**

|  |  |
| --- | --- |
| **B** | **B** |
| **B** | **B** |
| **B** | **B** |

**Group C**

|  |  |
| --- | --- |
| **C** | **C** |
| **C** | **C** |
| **C** | **C** |

**Group D**

|  |  |
| --- | --- |
| **D** | **D** |
| **D** | **D** |
| **D** | **D** |

**Group E**

|  |  |
| --- | --- |
| **E** | **E** |
| **E** | **E** |
| **E** | **E** |

**Group F**

|  |  |
| --- | --- |
| **F** | **F** |
| **F** | **F** |
| **F** | **F** |

### Example Jigsaw: Tsilhqot’in Motivations during The Chilcotin War

* Students are asked to develop a historical argument based on evidence drawn from six primary sources (documents or artifacts from the past). For example: “Why did the Tsilhqot’in warriors attack a road crew along the Homathko River near Bute Inlet in May 1864?”
* In their home groups (Figure 1), students develop a working theory based on their knowledge drawn from the textbook, maps, readings, and other secondary sources. You might ask them to draw up a timeline, highlight important contextual factors, themes related to the question, etc.
* Students leave their home groups and each joins a different expert group.
* Each expert group (Figure 2) studies a different document. Each student reads the document on their own and answers a series of questions about it (e.g., who wrote it, when, why, what is the message, etc.) and looks for evidence related to the question.
* They share their findings and each student combines the evidence together in a matrix which they will take back to their home group.
* Returning to their home groups, students share what they found in their expert groups and use the evidence to formulate and defend an argument (their answer to the question).
* Home groups present and discuss their arguments with the rest of the class.

### Version 3

1. Steps 1–5 are same as in Version 2.
2. Ask students to return to their expert groups a second time and share what they discussed in their home groups. For example, they can compare the arguments they formulated in their home groups to see if one is more convincing than the others. They could rank the arguments from most to least convincing.
3. Ask expert groups to present their rankings (or other analysis) back to the class for discussion.

## Pictionary

Like the party game, this competitive activity is a fun way to get students thinking together! Use this to review material before a midterm or final exam. Students need to “draw” their understanding of a concept, topic, event, etc., and their teammates need to guess the answer.

### Steps

1. Before class create a list of terms, concepts, events, etc. – key terms that might come up on an exam. Print these out or write them on index cards ensuring that you have enough of each term so that you can give the same terms to each group.
2. Devise a points scheme, e.g., first round win equals 500 points, second round is 1000 points, and so on and think of prizes for the winning teams (e.g., candy, bonus points on the exam). Make the terms more difficult in successive rounds.
3. Arrange students into groups. Ensure enough space so that a member of each group can be up at the whiteboard at the same time (probably max. 4–5 groups in most classrooms). **Pro Tip!** Having too many groups also makes it difficult to keep track of who wins each round.
	1. Variations: if you want to have more but smaller teams, have only half of the teams participating in each round. The other teams can watch. Use a timer and allow the observing teams to “steal” the points if none of the playing teams gets the answer.
4. Ask for one volunteer from each team to come to the whiteboard. When they come to the board, hand them the paper/card with their term on it.
	1. Variation: give each member of each team a number. Ask all the “1s” to come up, etc.
5. Direct the players to draw their concept on the board (no writing words, no talking). As they draw, their teammates need to guess the correct answer.
6. First team to answer correctly wins the round!
7. Repeat as many times as you want.

## Collaborative Concept Mapping

Use this strategy to encourage students to organize complex information, develop links between concepts or ideas, and build up their collective understanding of a topic.

### Steps

1. Prepare a “big picture” question that draws on or connects major themes, events, concepts, etc. in a course. For example: “What were the most significant features of the civil rights movements of the 1960s in the United States? Were these movements successful? Why or why not?” **Pro Tip!** Keep the specific question to yourself for the time being.
2. Provide a broad topic or prompt. For example: history of civil rights movements in the 1960s.
3. Ask students to individually write down on separate pieces of paper (sticky notes work well for this) all the key terms (concepts, events, people) they can think of related to the topic. Remind them to use a different slip of paper or sticky note for each term they write down.
4. Arrange students into groups. Make sure they have adequate space to work.
5. Tell students to put all their sticky notes onto a table (or use space on the wall).
6. Direct them to organize their notes in a way that makes sense to them. Suggest a mind map or hierarchical structure moving from broader concepts/themes down to more specific points or supporting evidence.
7. Ask groups to summarize their answer/argument based on the evidence collected.
8. Ask groups to present their concept map to the rest of the class. Guide them to explain how they made connections, how they decided on key points, where their information comes from, what specific examples they found, and so on.
9. Alternatively, provide large sticky notes, flip chart paper, or whiteboard space to let groups put up their maps around the room. Have the groups do a “gallery walk” where they move around the room and examine the maps produced by the other groups. Ask them to consider guiding questions such as: What do you notice about the structure of each map? Do the details clearly connect to the overall interpretation? What is missing or what could be emphasized more? Does anything look out of place?

## 4-S Application Activities

This activity is the cornerstone of Team-Based Learning (TBL) pedagogy but can be used on its own outside the context of a TBL course.[[1]](#footnote-1) Students work together to solve problems and debate complex ideas. The 4 S’s are:

1. Significant problem – a problem that is meaningful to students and complex enough that it requires the collective brainpower of the entire team.
2. Same problem – each group/team is trying to solve the same problem.
3. Specific choice – teams are required to come to a consensus on one clearly-defined answer.
4. Simultaneous report – teams share their answers with the class simultaneously.

### Steps

1. Think about a significant problem in your discipline with multiple potential solutions.
2. Arrange students into groups (or use teams already established in your course).
3. Provide a multiple choice question which requires students to make and defend an argument. For example: “Which of the following theoretical frameworks best explains the rise of working-class militancy in late-nineteenth century Europe?”

**Image**: Simultaneous reporting of answers in a TBL classroom – From Jim Sibley, <https://learntbl.ca/what-is-tbl/structured-problem-solving/>, 2018, accessed July 31, 2020.

1. Have students individually write down their choice and explain their reasoning.
2. Direct students to share answers with their team and decide on a consensus choice. Encourage them to go back to their readings or other materials to support their decisions.
3. Once a decision is made, ask teams to simultaneously reveal their consensus choice using answer cards (see image).
4. Ask students to look around the room and see how the other teams responded to the question.
5. Ask teams to explain their decision and supporting rationale.
6. As students discuss their answers, remind them to speak to each other (not to you). Ask guiding questions to prompt their thinking. For example: Why did you say \_\_\_\_? Team A, explain to Team B why you chose a different answer from them. Team C, what would you say to add to Team A’s argument?
1. For more on Team-Based Learning go to <learntbl.ca>, see Jim Sibley and Peter Ostafichuk, *Getting Started with Team-Based Learning* (Sterling, VA: Stylus Publishing, 2014), or ask for more information from the CTE. [↑](#footnote-ref-1)