

Collaborative Learning Techniques Depending on the Intended Learning Outcomes

The following list includes collaborative learning techniques for problem-solving, reciprocal teaching, and discussion by Berkley et al. (2005), each paired with the target level of learning in Bloom's and Fink's Taxonomies. However, the classifications are not rigid, as techniques at higher levels of learning may also involve behaviors from lower levels. The techniques are grouped from higher-order to lower-level learning (create, integrate, analyze, evaluate, apply, understand, and remember), with each group arranged from the least to the most complex in terms of the learning process and purpose.

Please, keep in mind that there are additional parameters that instructors need to take into account when choosing the appropriate technique, other than the intended outcome. These include the discipline, the course type and complexity, and the characteristics of the learners.

Moreover, instructors are encouraged to support all the levels of learning, meaning that for higher-order learning activities, there is a need to implement strategies to support the lower-order learning processes for the students to succeed. For example, in a problem-based course, an instructor might implement the Structured Problem-Solving technique, however there might be a need to implement additional collaborative or individual learning strategies to support the development of analytical, critical thinking, and cognitive skills (like Word Webs, Dialogue Journals, etc.) that the students might use independently and collaboratively.

To use this document, click the arrows in the headings below to read the description of each collaborative learning technique and its purpose. Determine whether the technique aligns with your course outcomes and learning objectives. Then, review the steps for preparation and implementation in your class. If you need further support in designing and implementing these techniques, feel free to reach out to an instructional designer at CETL.

Reference

Barkley, C., Barkley, E. F., Cross, K. P., & Major, C. H. (2005). Collaborative learning techniques: A handbook for college faculty. San Francisco, CA: Jossey Bass.

Create

Levels of Learning	Collaborative Learning Technique	Description & Purpose	Preparation & Procedure	Online Implementation
Create Assignments that require students to problem solve, complete a project, study a case, conduct research and write a paper	Think-Aloud Pair Problem-Solving  2 students  30-45 min. /Single or Multiple Session(s)	Solve problems aloud to try out their reasoning on a listening peer.  Emphasizing the problem-solving process.	 Instructor 1. Develops a set of field-related problems to: 2. Creates pairs and explains the roles (one problem-solver, one listener)  Pair of learners 1. Solves a set of problems alternating roles. Specifically, • Identify the nature of the problem • Identify the knowledge and skills they need to develop to solve the problem • Identify potential solutions • Choose potential solution • Identify outcomes 2. Summarizes their learning focusing on the problem-solving process.	Synchronous Online: Students work in pairs using an online Web-conference tool (breakout rooms on Zoom) taking turns solving a problem. Students write a summary indicating what they learned from it. Asynchronous Online: Use a discussion tool (like Canvas discussion boards) where students perform the steps described above asynchronously.
	Send A Problem	Each group solves a problem then	 Instructor 1. Identifies some problems that all	Online Asynchronous:

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	 2-4 students  30-45 min. /Single Session	passes it to a nearby group who does the same; the process continues for as many passes as needed; finally, the groups analyze, evaluate, and synthesize the responses to the problems and report the best solution.  The technique emphasizes the problem-solving process and the ability to evaluate solutions.	the groups will work on simultaneously. 2. Attaches each on the problem outside of an envelope where all groups will insert their answers. 3. Develops clear instructions. 4. Distributes each problem to a different group  Group of learners 1. Each group discusses a problem, generates as many solutions as possible, evaluates their responses, and picks the best one. 2. Each group passes their response enclosed in the envelope to another group that works on the problem without looking at the enclosed response(s). 3. Finally, each group reviews the solutions to a problem generated by other groups and	Create a forum for each problem that all students have access to, and separate forums for each group in Canvas. Each group discusses and generates solutions to the problems in their group forums and then posts their best solution to the general forum associated with the problems they solved. Finally, the groups analyze and evaluate the solutions generated by the other groups in the general forum.

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			reports to the whole class.	
	Case Study  2-6 students  Varies. /Single or Multiple Session(s)	The group analyzes a real-world scenario and develops a solution to the dilemma presented in the case.  The technique helps to bridge the gap between theory and application since it allows students to understand abstract principles and theories in a relevant way. It also helps students develop analytical and critical thinking skills, and decision-making.	 Instructor 1. Selects or writes good real or hypothetical cases.  Group of learners 1. Read and analyze identical or different cases to sort out factual data, apply analytic tools, articulate issues, reflect on their relevant experience, draw conclusions, and recommend actions that resolve the dilemma or solve the problem in the case. 2. prepare a written or oral statement describing their assessment of the case, the decision options as they see them, and their recommendations for a decision. 3. Report to the whole class and eventually they learn the solution in the real case.	Online Asynchronous: Teams can meet using web conference tools (Zoom, Google Meet, Microsoft Teams) or discuss the case in a group forum in Canvas. Then each group post their analysis to the general forum
	Structured Problem-Solving	Group members work together on a	 Instructor 1. Creates a problem that is	Online Synchronous: Groups discuss and

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	 4-6 students  1-2 hours /Multiple Sessions	structured format to solve a complex, content-based problem in a limited amount of time and report on the problem and the process.  The technique focuses on the problem-solving process helping student to master the skills of identifying, analyzing, and solving problems in an organized manner.	complex enough to require students to use sophisticated problem-solving skills, using research and current questions in the field. - Identifies a problem-identification and solving procedure that is appropriate to the type of problem selected. - Solves the problem to uncover difficulties or errors.  Group of learners - Solve the problem using the specific steps in the identified problem-solving technique - identify the problem - generate possible solution - evaluate and test the various solutions - decide on a mutually acceptable solution	solve a problem using a web conference tool (Zoom, Google Meet, Microsoft Teams) or instant messaging. Then, they present their solution to the whole class. Online Asynchronous: Team members discuss in their private threaded discussion forum to develop their solution to the problem. Each group posts their solutions to the general forum so that the whole class can see them and offer comments.

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			- implement the solution - evaluate the solution	
	Group Investigation  2-5 students  Several hours /Multiple Sessions to all term	Group members plan, conduct, and report on in-depth research projects to study a topic intensely and gain specialized knowledge about a specific area. Understand the importance of discovery and good research.	 Instructor 1. Decides the parameters to be established in terms of topic choices. 2. Decides the kinds of resources to be accepted. 3. Selects the methods for students to report their findings. 4. Assigns individual group process or task roles or allows students to determine and distribute roles themselves  Group of learners 1. Choose topics within the specific parameters, and instructor selects topics that the groups will investigate. 2. Form teams based on the topic interest. 3. Formulate their research	Online Asynchronous: Each group collaborates in its own threaded discussion area. The research process is broken down into its various parts and tasks. Final text reports are posted in a public forum for all the class to read. Finally, students need to complete an assignment to answer specific content questions or compare and evaluate the results.

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			questions, identify goals and the resources they will need to carry out their investigation, choose their methods of investigation, and divide up and assign the tasks. 4. Begin their investigation: gather and analyze information and decide whether more information is needed. 5. Prepare their final report.	

Care and Integrate

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Care & Integrate Activities that allow students to make connections between	Dialogue Journals  2 students  Varies /Single or Multiple Session(s)	Record their thoughts about a reading assignment, lecture, task, or experience in a journal that they exchange with peers for	 Instructor - Decides journal. parameters. - Determines the tasks. - Provides examples.	Online Asynchronous: Some students may feel too exposed by sharing their writing on the Web so consider making the exchange private.

ideas within and outside of the course.		comments and questions. 💡 connect coursework to their personal lives.	 Pair of learners 1. The writer writes on the left side and enters comments or questions after reading an assignment, after hearing lecture, performing a task, engaging in an activity, or listening to a discussion. 2. The responder writes on the right and responds with comments, suggestions, answers, questions.	Form groups in Canvas and encourage the exchange of journals in the pairs' private collaborative spaces. Use discussion boards or documents in which they post cumulative journal entries.
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Analyze and Evaluate

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Analyze and Evaluate Activities that allow students to examine information into parts, make inferences and judgements	Analytic Teams  4-5 students  15-45 min. /Single Session	Team members assume roles that exist within the norms of the discipline (summarizer, connector, proponent, and critic) and specific tasks to perform when critically reading an assignment,	 Instructor 1. Selects an assignment that requires use of a complex analytical process. 2. Breaks the process down into component parts or roles. 3. Performs the roles/parts to	Online Synchronous Use separate forums for each group where each group member responds to the prompt from their respective role. Teams present their analysis and findings to the whole class

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based on a set of criteria.		listening to a lecture, or watching a video. 💡 Develop understanding of the different activities that constitute a critical analysis preparing them for more complex problem-solving assignments.	uncover difficulties 🐜 Group of learners 1. Assume a role <u>Proponents:</u> List the points they agreed with and state why. <u>Critics:</u> List the points they disagreed with or found unhelpful and state why. <u>Example Givers:</u> Give examples of key concepts presented. <u>Summarizers:</u> Prepare a summary of the most important points. <u>Questioners:</u> Prepare a list of substantive questions about the material	Online Asynchronous Groups post their analysis in a whole-class threaded discussion. Note: this activity might feel artificial in an online environment so use sparingly.
	Word Webs ✍️ 2-4 students 🕒 30-45 min./Single Session	It's a collaborative version of a concept map. Students generate a list of related ideas and then organize them in a graphic, identifying relationships	🦉 Instructor 1. Chooses a concept for students to map, and diagram it to uncover potential problems and to create a model against which to assess group work.	Online Synchronous Use web conferencing and mind mapping tools. Note: Creating word webs mind be challenging and online this challenge might be

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		by drawing lines or arrows to represent the connections. 💡 Analyze a complex concept and deepen understanding of related concepts and their inter-relationships.	- Map a parallel concept to demonstrate the process to students. - Provide a tool as a shared writing space.  Group of learners - Brainstorm, writing a list of terms and phrases that express core concepts and supporting details. - Sketch out a diagram starting with the central idea and adding primary, secondary, and even tertiary associations. - Determine the ways the items are related, drawing lines or arrows to show the connections. - Add new ideas and relationships as they construct the web.	exacerbated. However, the act of negotiating and compromising is a useful skill that is worth the challenge.
	Affinity Grouping  3-5 students	Generate ideas, identify common themes, and then sort and	 Instructor Thinks of a complex category, issue, or problem for	Online Synchronous and Asynchronous: Use online pinboards like Padlet, Google Jamboard,

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	 30-45 min. /Single Session	organize them accordingly.  Unpack a complicated topic and identify and classify its constituent parts.	students to explore. - Supply students with materials to write down ideas and a flat space to organize the slips of paper into categories.  Group of learners - Individually generate ideas about a topic and write each item on a slip of paper. - Groups sort and organize the slips into categories as they identify common themes.	Microsoft Whiteboard, or Miro
	Sequence Chains  2-3 students  15-45 min. /Single Session	Analyze and depict graphically a series of events, actions, roles, or decisions, and apply knowledge and reasoning to arrange the points in a coherent progression.	 Instructor - Chooses what the students should organize into a sequence or series. - Creates a sample sequence chain to uncover potential problems. - Provides students with a	Online Synchronous Students use tools for creating timelines like Canva and mind mapping tools like Miro. They work in breakout rooms and take turns to order the items. Online Asynchronous: Students complete their portions of

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		💡 Deepen their understanding of processes and cause & effect and organize information.	scrambled list of items to be organized. 🐜 Group of learners 1. Students put the items in order and explain the relationship between items.	the timelines to develop a full sequence chain.
	Peer Editing ✍️ 2 students 🕒 2 hours /Peer Sessions	Student pairs critically review and provide editorial feedback on each other's essay, report, argument, research paper, or other writing assignment. 💡 Helps teach students how to identify the features of good and poor work and thus developing critical evaluation skills that they can apply to their own work.	🦉 Instructor 1. Creates a peer review form that lists the elements students should be looking for when they critique each other's work 🐜 Pair of learners 1. Students work in pairs, taking turns describing ideas for the paper that each individually intends to write or other type of work while taking notes and	Asynchronous Online Use collaborative word documents and allow students to collaborate asynchronously.

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			asking questions. - Each student conducts research for the individual paper, keeping an eye open for material that might prove useful to the partner. - Complete the work individually, but exchange work for peer editing. - Revise their work.	
	Critical Debates  4-6 students, then 8-12  1-2 hours /Single Session	Learners assume, discuss, present, and argue one side of an issue (usually contrary to their own views challenging their existing assumptions).  Technique for increasing motivation, enhancing research skills, promoting	 Instructor - Select a controversial topic in the field with two identifiable, arguable, and opposing sides. - Craft the debate proposition into a one-sentence statement general enough but avoiding ambiguity.	Online Synchronous: Use synchronous tools such as Web conferencing and a combination of group chat and full-group discussion. Online Asynchronous: Use discussion forums and consider posting a follow-up threaded discussion in which students can share how it felt to assume a

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		critical thinking, deepening understanding, and developing communication proficiency.	3. Prepare students for the debate through lecture, assigned reading, discussion, or student research on the topic.  Group of learners 1. Students identify which side of the proposition they most support, but they will argue the side that is contrary to their views. 2. Team members assume roles in needed like timekeeper, leader, etc. 3. Students generate as many arguments as possible or brainstorm (15-30 min.) and then choose 5 best arguments.	position contrary to their beliefs and inviting them to say whether participating in the debate changed their viewpoints.

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			4. A selected spokesperson presents the opposing side and the arguments (5 min each side), or each member of the team presents at least one of the arguments. 5. Prepare rebuttals (10 min). 6. Present rebuttals (5 min each side) 7. Whole-class discussion to summarize the important issues and to give students the opportunity to discuss the experience of arguing opinions they do not hold.	
	Fishbowl (Known also as Inside-Outside Circles)  3-5 inside circle, remaining	An inside group of students engage in an in-depth discussion while the larger, outside group listens and observes both the	 Instructor 1. Prepare a prompt question for discussion. 2. Inform the students about the rules. 3. Set the environment	Online asynchronous: 1. Create a discussion forum, inner-circle students will discuss for one week; outer-circle students will

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	students outside circle  15-20 min. Discussion/10-15 min. debriefing /Single Session	content and the process.  Technique to support critical thinking and deep understanding of the content. It is a useful technique for structuring and reducing the volume of postings in online discussions. Challenges: • Designing an authentic discussion activity that is worth having students observe and discuss. • Online Fishbowl can feel forced and unnatural.	for the two circles. 4. Decide whether you will participate in the small or the bigger circle, or whether you will be an observer.  Group of learners 1. Small group participates in a high-level discussion. 2. Bigger group listens to the discussion and takes notes on the content, logic, and group interaction. 3. Bigger group report out in a whole-class discussion, requesting that they address the content issues that arose and that they comment on group processes.	discuss the following week. 2. Send the small group a message if the discussion goes off topic.

Apply

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Apply Activities that allow students to use knowledge in new situations	Think-Pair-Share  2 students, then the whole class  5-15 min. /Single Session	Each student thinks individually of their answer to a question or problem posed by the instructor, then they share it with their partner, before sharing it with the entire class.  Warmup technique that helps deepen whole-class discussions because students can rehearse their responses in a low-risk situation (discussion with the partner)	 Instructor: 1. Develop an open-ended and thought-provoking question or a problem and try to answer it before class. 2. Pose the question/problem. Decide the medium (slide, worksheet, board) 3. Ask students to find a partner and give them a few minutes to think individually, and then discuss together, before the class discussion.  Pair of Learners: 1. Individually reflect and organize their thoughts 2. Compare and contrast their understandings in pairs and if	Online Synchronous Pairs of students use breakout rooms for discussion. Return to the main “room” for whole-class discussion. Online Asynchronous: Students share their ideas with their work partners by way of instant messaging or via telecommunications tools like Skype. One student posts the joint response to a whole-class discussion board.

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			they disagree, they get prepared to explain why and how they disagree. 3. One student shares the answer to the whole class.	
	Round Robin  4-6 students (if you cannot form groups due to limited number of enrolled students, practice this technique with the whole class)  5-15 min. /Single Session	Each student brainstorms ideas and speaks in order moving from one student to the next, refraining from evaluating, questioning, or discussing the ideas, rotating through Round Robin more than once if needed.  Brainstorming technique that allows students generate many and diverse ideas ensuring all's participation.	 Instructor: 1. Craft a prompt that can generate a sufficiently rich array of responses that can be expressed quickly and succinctly. 2. Think of and list as many possible responses before class predicting the duration of the activity. 3. Form groups, assign roles such as rule-enforcer and recorder (if necessary), and explain the purpose and the process. 4. Pose the prompt in the	When implemented online, the controlled participation may feel artificial, so it may use it sparingly. Online synchronous: order of participation can be structured by alphabetical order or another organizing strategy. Online Asynchronous: Asynchronous discussion (or a shared whiteboard or document) with established ground rules: Every student in the class or a base group should post a response before posting a second

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			preferred medium.  Group of Learners: Each student shares a word, phrase, or short sentence about the prompt.	comment or response.
	Buzz Groups  4-6 students  5-15 min. /Single Session	Small groups of peers discuss one or more questions informally just to exchange ideas before participating the whole-class discussion. Different groups may answer different questions.  Warmup technique that helps students practice their comments and increase their repertoire resulting in richer whole-class discussions.	 Instructor: 1. Craft one or more engaging discussion prompts and try to respond to them yourself before class. 2. Form groups and announce the discussion prompts, in the preferred medium, and time limit. 3. Check periodically and shorten the time limit if off topic or extend if on topic, but the time has ended.  Group of Learners: After discussing formally in small groups, they return	Online Synchronous Pairs of students use breakout rooms for discussion. Return to the main “room” for whole-class discussion. Online Asynchronous: Create discussion boards in each group’s space in Canvas for exchange of ideas. Create a whole-class discussion board for all students to participate

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			to the whole-class discussion	
	Talking Chips  4-6 students (if you cannot form groups due to limited number of enrolled students, practice this technique with the whole class)  10-20 min. /Single Session	Small groups participate in discussions and each student surrenders a chip ensuring equitable participation by everyone.  Effective discussion technique for equitable participation, and group problem resolution. Shy learners can share ideas, while talkers reflect.	 Instructor: 1. Craft one or more engaging discussion prompts. 2. Bring chips or other items that can serve as tokens.  Group of Learners: When all tokens are down, students retrieve and redistribute the chips so that the procedure repeats for the next round of discussion, unless the activity is complete.	Online Synchronous: Students click the button that allows them to virtually raise their hands, which serve as symbolic physical chips. When students contribute, they virtually put their hands down. Students contribute again when all hands are down. Online Synchronous: Consider simply establishing discussion ground rules regarding number and length of comments per student.
	Role-Play  2-5 students  15-45 hours /Single Session	Each student assumes a different identity and acts out a scenario to apply knowledge, skills, and understanding.	 Instructor: 1. Designs a scenario carefully. 2. Identifies the perspectives and defines the type and number of roles and the	Online Synchronous: Utilize a web conference or a telecommunication tool. Students may even use avatars, but it is recommended to focus on the important aspects of the task.

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		 Effective technique to enhance understanding and application skills by engaging students in active learning.	framework for their actions. 3. Considers whether there will be observers to comment on the action or moderators to intervene if a person is falling out of character. 4. Identifies resources.  Group of Learners: 1. Read the scenario and the resources and ask questions. 2. Assume roles and enact the Role-Play until the proposed behavior is clear, the targeted characteristic has been developed, or the skill has been practiced. 3. Participate in a discussion within small groups or with	

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			the whole class. Note: Consider asking students to reenact the Role-Play, changing characters or redefining the scenario and then holding another discussion.	

Remember & Understand

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Remember & Understand Activities that allow the students to demonstrate that they understand or can recall information.	Group Grids  2-4 students  15-45 min./Single Session	Students are given pieces of information and asked to place them in the blank cells of a grid according to category rubrics.  Technique to build basic schema by clarifying conceptual categories and remember information.	 Instructor Selects two or more related categories that organize course information. Some categories might require a second level of categorization.  Group of learners Sort the items of information into categories. Alternatively, each member is responsible for one category.	Online Synchronous: Groups work in breakout rooms on a web conference software using documents or digital whiteboards. Alternatively, each group member completes a grid which compares with the grids of the other members until they reach a consensus. Online Asynchronous: Groups upload

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			2. May correct their work by reviewing a completed grip by the instructor.	completed grids to a shared forum for all the groups to review.
	Team Matrix  2 students  10-20 min./Single Session	Discriminate between similar concepts by noticing and marking on a chart the presence or absence of important, defining features.  Deepen understanding by comparing and contrasting closely related concepts that students often mix up	 Instructor 1. Choose two or three related concepts. Identify the elements or the features that differentiate the concepts and those that both concepts possess. 2. Create a matrix with the concepts in the top row and either the categories for comparison or the identifying features in the left column (or vice versa)  Pair of learners 1. Come to consensus and complete the matrix 2. Compare group matrices with the	Online Synchronous and Asynchronous Use collaborative documents (Google Docs, Microsoft Word, Lucid Document, etc.) or digital whiteboards (Microsoft Whiteboard, Jamboard) Students articulate rationales for their contributions and share their matrices to a forum to compare them.

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			instructor matrix	
	Note-Taking Pair  2 students  5-15 min. /Single Session	Student partners work together to improve their individual notes from lectures or assigned readings, so their combined effort is superior to their individual notes, ensuring that they don't miss on important information, and they correct inaccuracies.  Deepen understanding by filling in gaps, fixing misunderstandings.	 Instructor: 1. Guide students on how to take good notes during lectures. 2. Use presentation slides or whiteboard to show overall structure by using titles and headings.  Pair of Learners: 1. Partner A begins by summarizing the main points from a section of the content to Partner B, who offers corrections and additional information. 2. Partner B repeats the same process for another section while partner A offers corrections and additional information.	

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	Learning Cell  2 students  15-30 min. /Single Session	Quiz each other using questions they have developed individually about a reading assignment or other learning activity, helping students pursue deeper levels of understanding of the content.  Effective technique to deepen students' understanding of the content enhance their analytical skills, and practice interpersonal skills.	 Instructor: 1. Model asking good questions. 2. Share the rules (like a firm timeline for submitting questions and answers)  Pair of Learners: 1. Each student develops a list of questions and answers. 2. Students alternate between asking and answering questions providing corrections if needed, until all the questions have been asked and answered. 3. Students record other learners' responses and submit them to the instructor to ensure individual accountability.	Online Synchronous: Use breakout rooms on a Web conference tool during live sessions, or other telecommunication tools like Skype before the live session. Online Asynchronous: Discussion boards on Canvas.

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			Note: to ensure that both students will participate and complete the activity successfully, ask them to email or post their questions in advance.	
	Three-Step Interview  2 students, then 4 (or whole class if small number of class)  15-30 min. /Single Session	Interview each other and report what they learn to another pair.  Effective technique for deepening understanding, building community and helping students to develop communication and interpersonal skills.	 Instructor: 1. Generate questions that probe for values, attitudes, prior experience, or comprehension of course content. 2. Predetermine time  Pair of Learners: 1. Student A interviews Student B 2. Student B interviews Student A; 3. Students A and B each summarize their partner's responses for Students C and D (or to the whole class) and vice versa.	Online Synchronous Pairs of students use breakout rooms for discussion. Then, they report out in a standard format such as a discussion forum. Online Asynchronous: Create a private forum for each group. Give partners a designated amount of time to interview each other through instant messaging, e-mail, or another preferred way. Then, students synthesize responses and post an introduction of their partner on the forum to the other students in the

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				base group or the whole class.
	Test-Taking Teams  4-6 students; recombine into 4-6  proportional to exam	Prepare for a test in working groups, take the test individually, and then retake the test in their groups, helping them improve their understanding. May be used for short quizzes within a single class period or for tests covering larger amounts of material.  Efficient technique to support individual accountability and benefit from collective knowledge.	 Instructor: 1. Present the content in lecture, reading assignment, or other activity. 2. Prepare a good examination and a test study guide.  Group of Learners: 1. May meet for fifteen minutes, a full class session, or longer. 2. Take the examination individually and submit it to the instructor for grading. 3. Rejoin their groups to reach a consensus on the answers and submit a group response to the test. Note: Consider averaging individual test grades and group	Online synchronous and asynchronous: 1. Create a forum for each group. 2. Give groups time to work together to pool information, resources, and ideas to prepare for the test. 3. Then, follow the know steps.

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			test grades to determine individual grades. Weight scores, for example, two-thirds for individual plus one-third for group.	
	Jigsaw  4-6 students; recombine into 4-6  time varies. /Single or multiple sessions	Students work in a small group to develop knowledge about a given topic and then formulate effective ways to teach it to others. Then these expert groups break apart and go to teach their knowledge to other expert groups who have developed knowledge on different subtopics.  Efficient strategy for extending the breadth, depth, and scope of learning	 Instructor: - Design the learning task and create a list of topics for developing expertise so it is simple enough for students with a good grasp of the subject to teach it to their peers, but complex enough to require discussion. - Divide the topics into a number of expert groups of equal number of learners. - Prepare a closure activity for reflection on what students have learned.	Challenges: - Helping students coordinate a complex project among several different group members. - Supporting students develop technical skills - Create an expert discussion forum for each identified topic. - Divide groups into different forums. - Reform groups with an expert member from each of the initial groups and reassign to different forums. Alternatively,

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			 Group of Learners: 1. Work together to master the topic and determine ways to help others learn it. 2. Move from their expert groups to new Jigsaw groups in which each student serves as the only expert on a specific topic. 3. The whole class reflects on the group discoveries in a closure activity.	allow the students to create modules and videos in Canvas