
Classroom Teaching Strategies

1. Think-Pair-Share:

Easy way of actively engaging learners in large lecture settings

In think-pair-share, the instructor:

1. Poses a challenging problem or open-ended question
2. Students are given a minute to individually think about the question. (This is important because it gives students a time to activate their own understanding by retrieving information from long-term memory.)
3. Students pair with another student sitting nearby to discuss ideas and answers about the question for several minutes. Some sentence stems you might provide to students:

“What I was thinking was...”

“My understanding at this time is...”

“This made me think about...”

4. The instructor has several options to close the activity. A whole group discussion can be facilitated to discuss ideas or classroom “vote” on an answer can be taken if appropriate. If individual student accountability is desired students can write down their thoughts on notecards to be collected by the instructor.

2. Think-Ink-Pair-Square

A variation on Think-Pair-Share

1. Problem or question posed by instructor.
2. Individuals write a response.
3. Pairs share and discuss responses.
4. Pairs meet with another pair (a square) and share and discuss responses.

3. 3-2-1

A variation of Think-Pair-Share

1. After the reading, lesson, or activity, write down the following:
 - 3** things that you learned.
 - 2** questions you have.
 - 1** new idea that made you think of something else or can make use of.
2. Find a partner and take turns sharing your lists.

4. Round-robin

This structure involves students by having them orally share information to solve a learning task. For example, students might each be asked to give a separate incident from the class novel that demonstrates the main character's unwarranted distrust of others.

1. Students grouped in 3s or 4s, count off.
2. Teacher gives the learning task.
3. Students take turns orally contributing in order. Some sentence stems you might give your students:

“As I read this I was thinking...”

“After doing that I think...”

“This makes sense to me because...”

“One question I have about this is...”

5. Talking Sticks

This dialog protocol is used to manage equitable and respectful student participation in group discussion. It makes visible the control of the speaker and responsibility of each group member to participate.

1. Form groups (generally 3 - 5 people).
2. Each person places their pencil/pen (Talking Stick) in the middle of the table.
3. To make a comment you must pick up your “Talking Stick” - then you speak and hold onto your pen/pencil.
4. Once you have finished your comment hold onto your “Talking Stick” until all other group members have had a turn (group members may pass).
5. Once everyone has commented, place your “Talking Sticks” back in the center.
6. Continue until the time is up.

6. Paraphrase Passport

This dialog protocol is used to promote active listening and synthesis of group ideas as well as expression of individual viewpoints.

1. Pair up, or form groups.
2. One person begins by making a comment related to the topic.
3. The next person to speak must paraphrase the first comment before stating their comment.
4. After paraphrasing the prior comment, the group member can add their comment.
5. Repeat the process (paraphrasing the person before you and adding your comment) continue for a predetermined time, or until the topic has been thoroughly discussed.

* It helps if there is one person designated to facilitate this process.

7. First Word-Last Word

This is a good way to process reading in groups of about 4 students.

1. The first person chooses a passage that meant something to them. They read it without comment.
2. The next person BRIEFLY comments on that passage, or passes if they have nothing to add.
3. The next person comments, and so on around the group.
4. The person who chose the passage closes the discussion by adding their comment and summarizing what the group did.
5. Then the next person reads a passage and each person comments. Continue until the whole group has read their passage.

8. Three-step Interview

This structure is a useful get-acquainted activity, but truly outstanding method for having students share (and learn from) completed individual assignments prior to submitting them (e.g., original narratives and reports, research article or current event summaries, service-learning experiences, and artistic products). Although labeled as three steps, it is beneficial to insert two additional steps at the beginning: (1) Discuss how a good interview is conducted, encouraging the interviewer to pose a question and then listen to the interviewee. Role-play an inappropriate interview where a TV personality keeps interrupting the guest. (2) Allow time for students to draft 3-5 appropriate-to-topic interview questions.

1. Students pair up and one in each pair interviews the other.
2. At the teacher's signal, students reverse roles, and the other person interviews.
3. At the teacher's signal, the pairs square with another pair, making a foursome, and round-robin share what they learned in their interview of the other person.
This promotes listening and learning from others.

9. Numbered-heads Together

This structure works well when (a) it is used to check understanding of higher-order thinking, (b) the answer has multiple parts, and (c) answers are convergent.

1. Students seated in groups of four, numbered off 1, 2, 3, and 4.
2. Teacher presents a problem and asks students to put their heads together to solve it.
3. Group-discussion time occurs.
4. One number (e.g., number 4) is randomly called, and that person answers for his or her group. For problems with multiple parts, different groups can give one part. If there is only one answer, one number 4 responds and then the other number 4s may be asked to agree/disagree or to add to the response.

10. Send-a-Problem

This structure gives each small group the opportunity to write review questions to trade and solve with another group, perhaps in preparation for an exam.

1. Students grouped in 3s or 4s, each is asked to write a high-consensus verifiable course-review question on a separate 3 x 5 card.
2. Group members test the clarity of their questions with group mates, revise as needed, and write a final draft on one labeled side of the card and the answer on the other side.
3. Group questions are stacked and clipped together and sent to another group to solve as a group by reading each question aloud, solving together, and checking the answer when all agree to do so.
4. If needed, groups can send a diplomat to the question's author in order to check intentions.
5. After answers are checked, the receiving group writes a comment on the answer side of each card, indicating if they agree or disagree with the author's answer, and then returns the cards to their group of origin or to another group to solve.

11. Gallery Walk • Travellers and Tellers

The gallery walk is a way of sharing student work.

1. Students individually or in a group create a product (artwork, academic poster, PowerPoint, demonstration, etc. that illustrates a concept or process.
2. Student products are displayed for peer interaction and review
3. Faculty may or may not require students to provide critical feedback in the peer review process
4. If the product might benefit from having an "explainer" present with the product, students take turns being travellers (walking the "gallery" to examine the products) and tellers (staying with and explaining their product)

12. Categorizing with Post-Its

This structure promotes a visual group analysis of a course issue, and requires small Post-It pads, large sheets of chart paper, masking tape, and markers.

1. Students, grouped in 4s, brainstorm ideas on the announced topic, writing one idea Per Post-It. [Example topic: lists ways to improve the K-12 public schools.]
2. Striving for a dozen or more ideas on Post-Its, students then categorize their ideas in groupings they can justify on a large piece of chart paper, labeling each category.
3. Completed charts are posted around the room and one group member from each group is identified to remain with their chart as the chart explainer while the rest of the group gallery walks around the entire room to study the other charts.
Make charts accessible during break for the chart explainers to view other charts.

13. Jigsaw

Jigsaw is a division of labor strategy especially useful for facilitating learning from assigned reading. For example, if four chapters of the text are assigned for reading, each student in a foursome specializes in one of four chapters and studies it in order to teach its contents to his or her group mates, after which all group members are responsible for understanding all four chapters. To assess individual accountability, each student completes an integration-of-chapters assignment alone. This may sound a lot like the age-old graduate school study group—or a pot-luck dinner—where you are responsible for only a piece of the puzzle, but ultimately view the entire picture!

1. If using small groups of four, the teacher divides the material to be jigsawed into four equal parts in terms of length and complexity, assuring that each part is independently comprehensible to the reader.
2. Each student in a heterogeneous home group is assigned a different part to independently study in order to master key concepts and then teach them to group mates. At the initial introduction of jigsaw to a class, consider teaching the jigsaw process by using four one-page information sheets and guiding students through all the Jigsaw steps during a class session. Allow sufficient time for students to master their sheets, design a teaching strategy, and then teach the concepts from all four sheets to group mates.
3. Each student independently completes an instructor-designed integration assignment that requires using the concepts from all four sheets.

An alternate form, Expert-group Jigsaw, increases student interaction and complexity. In this version students with the same parts are asked to meet as experts (homogeneous groups) to discuss their mastery of key concepts and teaching strategies before they meet with their original group (heterogeneous home group) to teach their parts. Students learn to appreciate the insights of others in expert groups and are often reluctant to select the first version of Jigsaw over this modification in the future.

Two teaching tips: (1) When teaching either form of Jigsaw with large classes, reproduce the four sheets on four different colors of paper and ask students to form rainbow or like-color groups when meeting as home or expert groups. (2) Always give students access to all of the material, not just his or her part, so that each can check the accuracy of what's being learning from group mates.

Assessment Strategies

14. The Muddiest point

A quick assessment tool to make student thinking visible.

1. At the end of lecture give students two to three minutes to answer the following:
 - What was the muddiest point in today's lecture?
2. After collecting the responses, the instructor can quickly read the points and address the questions raised by the students in the next lecture.

15. One minute Paper

A quick formative assessment tool to help instructors find out what students have gotten out of a given day's class. This strategy works well with both large and small classes.

1. The instructor takes the last minute (or, realistically, three minutes) of class and asks students to write down short answers to two questions:
 - What was the most important point made in class today?
 - What unanswered question do you still have?
2. Students respond in writing on a 3x5" card or other paper
3. Students can respond anonymously or the instructor may ask students to write their names if individual accountability is desired.
4. The instructor then reviews the responses and adjusts the next step in instruction

16. Rubrics

An assessment tool that communicates the expectations for an assignment by listing both the criteria, or "what counts", and the level of performance from excellent to poor.

To create a rubric:

1. List criteria that will be used to evaluate the student assignment. This can be done by examining exemplary student work and articulating the characteristics that make it exemplary.
2. Describe the different levels of performance that can be achieved for each criteria. Concrete examples are helpful.
3. Criteria and Performance level descriptions can be combined into a table such as the one illustrated below:

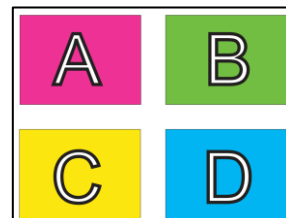
HISTORICAL FICTION ANALYSIS RUBRIC				
Objectives	Mastery	Moderate	Basic	Earned Points
Writes an essay analyzing the genre by using details from the novel	8 points The introduction identifies the criteria of the genre, and the body of the essay explores in detail two or more specific examples that prove the novel meets the criteria.	5 points The introduction identifies the criteria of the genre, and the body of the essay explores one or two specific examples that prove the novel meets the criteria.	3 points The introduction identifies the criteria of the genre, but the body of the essay does not clearly explore the ways in which the novel meets those criteria.	
Writes a well-organized essay that has a clear focus, logical development, effective use of detail, and variety in sentence structure	12 points Student focuses the essay in a clear and logical manner. There is an introductory paragraph that includes background, thesis, and structure statements. The body paragraphs have topic sentences and supporting details, and the	8 points The student's writing is focused and clear to the reader. There is an introductory paragraph that includes background, thesis, and structure statements. The body paragraphs have topic sentences and supporting details, and the	5 points Student attempts to focus writing, but some elements of the essay are vague and confusing. There is an introductory paragraph, but it is missing background, thesis, or structure statements. The body paragraphs have topic sentences	

Point values can be assigned to specific criteria and performance levels to generate a numerical measure of student performance.

A rubric can be used to communicate performance expectations to students as well as a tool for instructors to evaluate student work.

17. ABCD Polling Cards

An easy and effective way of formatively assessing student thinking during a large lecture section or medium size group. Instructor poses a question with up to 4 response choices labeled A, B, C, or D. Student are given a piece of paper divided in quarters that allows them to display one of the letters in response. The instructor can visually scan the student audience to get a sense of the range and frequency of answers.



Curriculum Design Strategies

18. Backward Design

An instructional design method that begins with the end in mind. Its focus is on aligning all instruction to achieve articulated and measurable student learning outcomes. It is based on the following three stages:

1. Identify desired learning outcomes
2. Determine acceptable evidence of student achievement of learning outcomes
3. Plan learning experiences and instruction to support achievement of learning outcomes and production of evidence

19. Curriculum Mapping

An instructional design tool to examine when and to what extent specific content knowledge, skills, and dispositions are addressed within an educational system instructional program or individual course. For example a curriculum map for a 15-week introductory Physics course might be a table or matrix specifying which concepts (energy, forces, etc.) are addressed which weeks during the term. Curriculum mapping a course requires:

1. Identification of all key knowledge, skills, and disposition learning objectives
2. Identification of all assessment tools used to collect evidence of student learning
3. Creation of a map over time (usually in matrix or table form) that illustrates when each learning objective is addressed and when each assignment occurs

Curriculum maps can illuminate missing instructional support for key concepts and a curriculum map can be created to examine a single concept or group of concepts or skills.

Technology Enabled Tools

20. Poll Everywhere: <http://www.polleverywhere.com/>

An Audience response system that allows polling or voting using phones, tablets or computers. Polling accessed via sms text messaging, the web, or twitter.

- free for audiences of 40 or less
- easy to use
- does NOT connect or record responses to specific individuals

21. Back Channel: <http://backchan.nl/>

Uses networked mobile devices to support a real-time online discussion simultaneously along side a lecture or activity.

- no cost
- allows participants to post questions and vote on each other's questions
- can be monitored or displayed concurrently with the activity or lecture

22. Clickers: <http://www.turningtechnologies.com/>

An Audience response system that allows polling and short answers using handheld infrared devices that communicate with a receiver installed in a computer.

- Turning Technologies is Sac States current clicker adoption
- students pay between \$30-50 for a clicker
- software and receiver to faculty is free
- allows responses to be linked and recorded to specific individuals
- responses can be directly loaded into blackboard

23. "Call a friend"

Uses mobile phones to gather data or collaboratively construct knowledge. Instructor poses a question or specifies data to be gathered. Students are given 5 min or so to call a friend to gather the specified information. The results are tallied and discussed. For example an art instructor used "call a friend" to uncover the dearth of women artists in traditional versions of history. She asked students to call a friend as ask for the names of three artists. Very few if any women artists were named, making her point and establishing the motivation for the study of women artists.

24. The "flipped" classroom: <http://www.knewton.com/flipped-classroom/>

The "flipped" class refers to a curricular design where activities traditionally held in "face to face" classrooms and activities outside of the classroom are "flipped" or switched. Although the use of technology is not necessary for a "flipped" class, the widespread availability and access to streaming video has enabled new parts of the teaching and learning process to be "flipped". For example, asynchronous delivery of lecture has allowed chemistry teachers to spend time in class facilitating problem-solving, an activity usually done as homework outside of class.

25. Wiki Challenge

Students use a wiki space to collaboratively create knowledge or post information. Instructor creates a report framework or template for the wiki page and students are challenged individually or in groups to create a page using the framework. For example students could be challenged to write about significant accomplishments of a writer or post answers to study guide questions. The instructor reviews the page for accuracy and completeness. Students can use the wiki as a resource for exams.

26. Lecture Capture

Lecture capture records classroom activities in a digital format and delivers them over the web. Students can access the recordings using computers, tablets, phones and other mobile devices. Lecture capture technology records instructor's audio, video, laptop, tablet, whiteboard, and document camera images and synchronizes them so they can be streamed or archived for on-demand playback. There is no production work required on the digital files before they are viewed by students. Students can use the recordings to reinforce difficult concepts or listen to missed lectures.

More info on:

Think Pair Share:

<http://www.wcer.wisc.edu/archive/CL1/CL/doingcl/thinkps.htm>

Lynam, F. (1981). The Responsive Class Discussion. In A. S. Anderson (Ed.), *Mainstreaming Digest*. College Park, MD: College of Education, University of Maryland.

The one-minute paper:

Angelo, T.A., and Cross, K.P. *Classroom Assessment Techniques*, 2nd ed., Jossey-Bass, San Francisco, 1993, pp. 148-153.

Backward Design:

Understanding by Design, Grant P. Wiggins, Jay McTighe, 2005, Association for Supervision and Curriculum Development

Instructional Toolbox

(A useful “bag of tricks” for teaching)

Classroom Teaching • Assessment • Curriculum Design • Technology tools

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5	Talking sticks	low	
6	Paraphrase Passport	low	maybe
7	First Word- Last Word	low	maybe
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10	Gallery Walk • Travelers & Tellers	med	yes
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21	Back Channel	medium	yes
22	Clickers (ex. Turning Point)	high/medium	yes
23	Call a friend	low	yes

24	Flipped Classroom lesson	High	Yes
25	Lecture Capture	medium	Yes
26	Wiki Challenge	high/medium	yes