

Discussion Techniques

Think-Pair-Share

Addresses critical thinking and collaborative learning.

Steps:

1. Teacher asks a critical thinking question (synthesis or evaluation in Bloom's Taxonomy).
2. Students discuss question with neighbor and come to some resolution.
3. Conclusions from pair are then shared with the class.

Ex. Environmental Science. When you go to the grocery store, do you ask for paper or plastic? Why? Follow-up question, "Which is actually more environmentally sound?" (This last question could be a written homework assignment.)

ConceptTest (Mazur, 1997)

Allows for in class critical thinking and assessment of student learning of main concepts.

Key information is supplied to set up each activity.

Steps:

1. question posed (1 minute)
2. students given time to think (1 minute)
3. student record individual answers (optional) (1 minute)
4. students convince their neighbors (peer instruction) (2 minutes)
5. students record revised answers (optional) (1 minute)
6. feedback to teacher—tally answers (timing depends on method used)
7. explanation of correct answer (2-5 minutes)

When designing ConceptTests, the following criteria apply:

- focus on a single concept
- should not be solvable by relying only on equations
- have adequate multiple-choice answers
- be unambiguously worded
- be neither too easy nor too hard.

Ex. Space Science. What causes the seasons? (Set up material could include these facts. Earth's orbit is very nearly circular. Earth's closest approach to the sun occurs in early to mid January. When it is winter in the US it is summer in Australia. Earth is tilted by 23.5 degrees from the plane of the solar system.)

Jigsaw Technique

Enables decisions to be made by informed "experts" and allows development of communication skills.

Teams of students are assigned to investigate different aspects of the same problem/issue. Once the teams have completed their assignments, members of each team disperse during class and reform in new groups with one "expert" on each different aspect present in the newly formed second group. The pieces are then put together (thus the name) and a larger question can be answered.

Steps:

1. Prepare several different assignments for the class. Have the class divide into groups each handling one of the assignments.

2. Groups prepare in class or outside of class.
3. Once prepared, these groups are dispersed and new groups form containing one member from each assignment, the so-called “expert”.
4. Each “expert” is responsible for teaching the rest of the second group what they have learned from their first group.
5. The second groups then puts all the pieces together and addresses a larger question posed by the teacher.

Ex. Space science. Each initial group studies a planet. Groups are dispersed and new groups form. The question posed is, “If Earth were to be destroyed, which planet would be the next best alternative. Why?”

Gallery Walk

Allows for the analysis of complex questions and fosters evaluation of proposed solutions.

Steps:

1. Posters with complex, multi-pronged or “loaded” statements are posted around the room.
2. Students file in and are randomly assigned to a poster.
3. Each initial group is given one color of pen.
4. The group as a whole responds to the statement on the poster writing down their response.
5. Call time and have each group move to the next poster and repeat the exercise.
6. After all groups have visited all the posters, have them return to their original poster and analyze the responses of the other groups. Have they changed their opinion? Why?

Ex. Biology. Poster topics include: I believe that stem cell research should be banned. I think that human cloning is wrong. I believe that all convicted felons should have their DNA profile put into a database in an attempt to solve outstanding cases.

Simulations, Role-playing or Panel discussions

Addresses all aspects of a complex problem and allows for the development a certain depth in knowledge and understanding.

Possibilities are endless but include simulated court cases, international negotiations, mock press conferences with journalist and “experts”, town meetings on designating hazardous waste sites, mock senate hearings on controversial environmental issues etc. Panel discussions can include guests invited by the students from outside the class.

Ex. Environmental science. Deforestation of the Amazon rain forest. Each student is assigned an interest: native, cattle rancher, miner, large corporation (fruit, sugar, oil etc.) and must convince others in the class or their group to see their position.

'Angel Card' Discussion Technique

By Rhonda Gardner
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Allows for focusing a discussion of a difficult or complex subject, such as a newspaper article on something going on in the community and encourages full participation. (Rhonda is an English teacher and uses this technique to discuss novels and plays. She based this technique on Angel cards that many people in Alaska draw as a daily source of inspiration. See her examples below.)

Steps:

1. Meet students at door and have them pick a card. On the card is an important concept, theme etc. taken directly from their reading.

2. Give the students 5-10 minutes to write down all the associations they can make between that word and the text.
3. Draw randomly from a second set of cards that match the first. The individual who has that card must start the discussion.
4. This student leads the discussion and calls on others.
5. Repeat the word selection as necessary.

Ex. English. Hamlet and King Lear.

Hamlet Words

Frailty, Rashness, Ambition, Garden, Insanity, Revenge, Clarity, Nature, Punishment, Knowledge, Passion, Necessity, Reason, Time, Divinity, Loyalty, Honor, Truth, Repentance, Traps, Justice, Indirection, Betrayal, Friendship, War, Perception, Value, Disease, Poison, Action, Love, Trust

King Lear Words

Betrayal, Deception, Disguise, Madness, Storm, Clothing, Loyalty, Family, Fool, Treachery, Reconciliation, Defense, Protection, Guidance, Blindness, Redemption, Duty, Power, Pain, Age, Wisdom, Touch, Love, Respect, Father

Variation: Instead of words, use pictures, charts or other representations of data.

Feedback or Scored Discussions

John Zola, Fairview High School in Boulder, Colorado.

Students receive positive or negative points each time they participate in a discussion. The teacher or observation group awards positive points for such things as: taking a stand on an issue, presenting factual or research-based information, or making a relevant comment. Negative points are given for interrupting, monopolizing, personal attacks or making irrelevant comments.

Allows students to conduct a discussion among themselves without having the instructor in a primary role and raises awareness about group roles and processes.

Steps:

1. Divide the class into two groups. One group will be part of an inside circle having a discussion and the other half will be taking notes on group dynamics and the quality of the discussion.
2. Have the inside group pull questions out of a hat. The students should have had access to these questions in advance to prepare at some level.
3. At the midpoint in the class, the groups will switch roles.
4. The instructor takes his/her place in the outside circle and should not interfere unless absolutely necessary.
5. Between or after both groups have had a discussion, hold a debriefing session.
6. Address these questions: Did the question/questions asked get answered well? How well did the group work together throughout the discussion? Did they distribute "air time" equitably? Did they encourage shy people to speak? Did they introduce new questions or insights? Did they challenge each other appropriately? Did they help each other clarify their contributions? Did they make relevant contributions?

Variation: Have the students solve a word problem and monitor the most effective way to do so collaboratively.

Nominal Group Technique

Addresses student fear of appearing stupid in class.

Steps:

1. Pass out 3X5 cards and ask a critical thinking question.

2. Allow students time to answer.
3. Collect the cards and redistribute them.
4. Have the students take turns reading/defending the answer/opinion on their card as if it were their own.
5. Write down the responses on the board, cluster and tally them. Have the class analyze this.

Alternative: use this to generate questions for a review session. The questions are then automatically prioritized.

Ex. Chemistry. Write down all the variables you can think of that might affect the reaction between these two compounds.

Pyramid Technique or Snowballing

Promotes participation, sharing of ideas across large varied groups and critical thinking.

Steps:

1. Outline a complex problem that is currently facing the community (i.e. superfund site clean-up).
2. Have groups of two analyze and propose solutions to the problem in a brainstorming session.
3. Have two groups of two come together and combine their positions/suggestions and limit their proposals to their top five or so. Allow them to prioritize for themselves.
4. Repeat until the entire class has developed their top three solutions.

Ex. Geological Sciences and Physics: Is Yucca mountain the best solution to the nuclear waste problem?

Lineup or “Stand Where You Stand” (Also called **four-square** where students pick a corner of the room that represents their view.)

A line of masking tape is placed on the floor, with each end of the line representing a polar position on a contentious issue. Students are asked to stand at the point in the line that represents their opinion. (Strongly agree, agree somewhat, neutral or no opinion, disagree somewhat, strongly disagree.) However, to do this, they need to talk to their neighbor about his/her position and truly hone in on their own.

Promotes critical thinking and develops communication skills.

Steps:

1. Teacher places a line of masking tape on the floor and poses the contentious issue.
2. Each student must write down on a card or piece of paper their opinion and why they think the way they do.
3. They must now line up in the tape in order discussing with each other their opinion and why they hold that opinion.
4. As an optional requirement, the teacher may request that each student list the opinion and stated reasons of the student to their immediate right and their immediate left. Each student must therefore have at least one reason for their opinion and not “just because.”

Ex. Space Science. Should the money be spent on a manned mission to Mars?

Sharing Limited Resources

Creates positive interdependence, promotes cooperation, encourages lateral thinking and teaches communication skills.

Steps:

1. Divide the class into groups and pose a complex problem.
2. Give each group only some of the information (i.e. one dataset) they will need to answer the question.

3. Allow them to realize this for themselves and develop strategies for getting the requisite information from other groups.
4. Have each group present their findings in a written or oral report. Verify that they give credit where credit is due.

Ex. All Sciences. Is our drinking water safe? How do you know? If not, what should we do?

Fishbowl

Declare 3-4 students the experts and assign them a controversial topic to prepare. They will argue for the more provocative side. This is to help them understand how others feel about the subject and how to better hone their own arguments. They will be in the center of the room and have three minutes to argue their case. After the “experts” have presented, students from the class may come up one at a time and rebut those arguments by sitting in the one empty seat next to the “experts.” The rebuttals are limited to one minute and each student can only comment twice. The pace is meant to be very fast with students jumping up to get in the empty seat, make their comment or ask their question and then the next student does the same.

Fish Bowl Discussion as a **Participant**

1. Assign 3-4 students a controversial topic.
2. Have those students become an “expert” on these subjects by reading, looking up pertinent information etc. Each student may bring up to three note cards for reference. If they quote statistics, they must have the reference available for challenge. The students should be arguing for the side deemed most controversial.
3. The ‘experts’ will form a circle in the center of the class and each will speak for three minutes on the topic.
4. Anytime after the three-minute speeches, an audience member may temporarily join the inner circle and pose a question or make a comment. The “experts” will need to be able to respond. They may use their notes.

Fish Bowl Discussion as an **Observer**

1. Have the class prepare two questions or comments on the topic for the day. Each observer will be allowed to contribute only two comments/questions per fish bowl session.
2. The observers will assess each participant using an appropriate rubric.

Examples: Evolution, Nature of Science, Academic Aptitude etc.