TEACHING MASTERS

Adapted from:

BEYOND MONET

THE ARTFUL SCIENCE OF INSTRUCTIONAL INTEGRATION

Barrie Bennett / Carol Rolheiser

Jan Kielven
2001

Beyond Monet: Masters

- ☐ Motivation
- ☐ Framing Questions
- ☐ Types of Student Responses
- ☐ Think Pair Share
- ☐ Place Mat
- ☐ PMI: Positive, Minus, Interesting
- ☐ EBS: Examine Both Sides
- ☐ Fishbone
- ☐ Venn Diagrams
- ☐ Numbered Heads, Value Lines, Walk About
- ☐ Cooperative Learning (Theory)
- ☐ Inside Outside Circles
- ☐ Four Corners
- ☐ Three Step Interview
- ☐ Graffiti
- ☐ Teams Games Tournament (TGT)
- ☐ Concept Attainment: Bruner
- ☐ Concept Formation: Taba's Inductive Thinking Strategy
- ☐ Mind Mapping
- ☐ Concept Mapping
- ☐ Academic Controversy
- ☐ Team Analysis
- ☐ DeBono's Six Thinking Hats
- ☐ Multiple Intelligences
- ☐ Emotional Intelligence
- ☐ Learning Styles
- ☐ Brain Research
- ☐ Children at Risk
- ☐ Gender
- ☐ Bloom's Taxonomy

Note: Each of the handouts have an acknowledgement on the last page of the handout with the exception of Bloom's; it's a version which I got years ago and was not acknowledged.

Six Characteristics of Motivation

❑ **Success:** Nothing succeeds like success!

❑ **Concern:** Finding the right mix between stress and lack of concern; control this
through:
- Increasing accountability
- Visibility
- Consequences
- Time
- Help

❑ **Meaning:** Relate to past, present, future knowledge and experiences of students

❑ **Positive Feeling / Tone:** winning over, politeness

❑ **Interest:** Use humour; use variety, vivid ideas, creativity…

❑ **Knowledge of Results:** (Feedback) Knowing that what we are doing is being done well,
or need to be improved and we know what to do to improve so, are motivated to continue.
- Assess, check, monitor, check for understanding…

Teacher Enthusiasm and Motivation

❑ Vocal delivery, word choice, humour, eye movement, facial expressions, gestures,
movement, energy level, acceptance, variety and novelty

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Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

FRAMING QUESTIONS: A Skill

- *Know your purpose in asking the question. Will the question you are asking give fulfill that purpose?*

- Understand the complexity of your question and where you need to begin as a result
  Bloom's taxonomy -   a quick review
    - Knowledge – recall, recite
    - Comprehension – explain, provide examples
    - Application – act on the understanding
    - Analysis – compare/ contrast, pull apart
    - Synthesis – reinvent, create, look at in a new way
    - Evaluation – judge based on criteria

- Judge the amount of time / wait time you will require for adequate responses at each consecutive level

- Respond appropriately to each type of student response

- Provide feedback

- Keep things Safe

- Consider Accountability / Level of Concern

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Types Of Student Responses: Possible Responses you can Make

❏ **No response**
- Maybe the question was too complex
- Perhaps the classroom is not safe
- Perhaps the student did not hear the question
- Save Face for the student (e.g. Perhaps I worded the question in a confusing way; let me rephrase it – then allow him or her to think and share with a partner)

❏ **Partially correct**
- Why was it only partially correct?
- Maybe question was too extensive
- Highlight the correct part, repeat question and ask for extension to that part
-

❏ **Silly response**
- Asking for attention
- Find a grain of truth in the response if you can
-

❏ **Guess**
- Can be considered as a 'no response'
- Allow time for him or her to discuss in a group first
- Allow for a 'pass' answer at times
- Follow up later
-

❏ **Incorrect response**
- Possible question was misunderstood
- Possible that complexity of question was too high for student
- Multiple components can often confuse
- Break down the question into simpler parts
-

❏ **Correct response**
- If the question was too easy, don't pass judgement so you encourage more thinking
- Simple 'thank you' (as Barrie often does ☺)
- Positive reinforcement

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THINK – PAIR - SHARE: A Collaborative Tactic

An instructional tactic where students are asked to think for a moment first, then pair up to compare their experiences / thoughts, then share them with a larger group.

Preskills:

☐ Can students listen effectively and actively to one another?
☐ Can they paraphrase what another person says?
☐ Can they suspend judgement?

Factors to consider beforehand:

☐ Do students perceive the classroom as a safe environment for sharing?
☐ How long should each part of the process take?
☐ Are there an odd or even number of students?
☐ Who will work with the ESL student or those who, for example are 'loners'?
☐ How will you pair up people? Number them off? Let them choose? Alpha?
☐ *How accountable will you make each student?* How will you do so and still keep the environment an emotionally safe one?

THINK

☐ What background information do students need to be able to think effectively about the question?

☐ How can you frame the question to indicate the level of thinking you expect:
   • Recall, comprehension, application, analysis, evaluation or synthesis (Bloom's Taxonomy)

PAIR

☐ How directed do you wish this to be? Discussion or "listen – repeat – record" or something in between?

SHARE

☐ Who will report? Random so all are equally accountable (the person with darker hair, for example) or a more directed process?
☐ What will you do with correct, incorrect, partially correct responses; a silly response; a convoluted response; a guess, a 'no' response – and still maintain an emotionally safe environment?

Adapted from Beyond Monet The Artful Science of Instructional Intelligence, Barrie Bennett / Carol Rolheiser

PLACE MAT: A Collaborative Tactic

Place Mat is a form of collaborative learning that combines writing and dialogue to endure accountability and participation of all students. It involves groups of students working both alone and together around a single piece of paper to simultaneously involve all members.
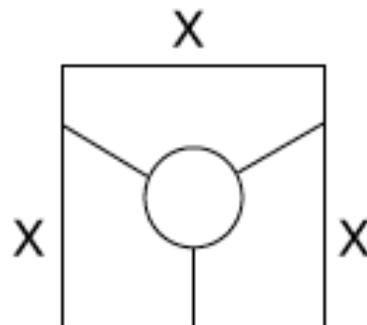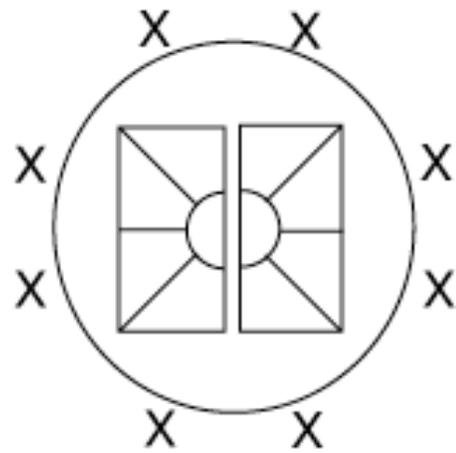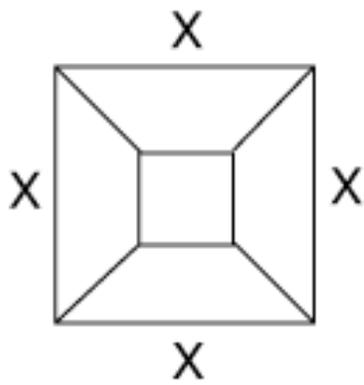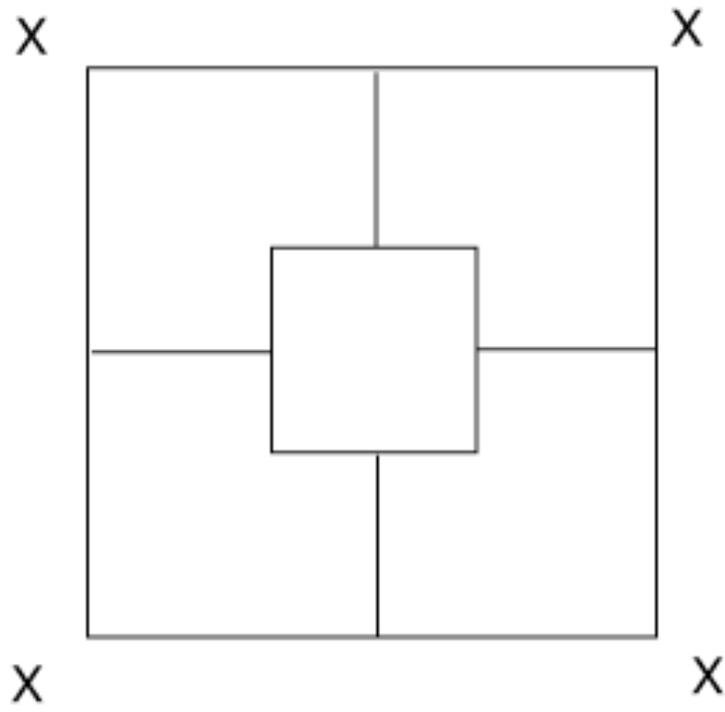
MATERIALS:

☐ Chart paper is preferable, but not necessary. Pens and Pencils.

☐ The paper is divided up into pieces based on the number of member in the group with a central square or circle. (samples are attached)

☐ Other organizers can be placed within the place mat to help structure material

PROCESS

☐ Carefully construct the assignment; it's construction will depend on the learning goals: eg, are you aiming to:
- Brainstorm / generate / introduce a new idea?
- Use as an elaborative / extension tool to provide depth to the lesson?
- Encourage team problem solving?
- Distinguish between primary ideas, secondary ideas and supporting detail?
- Structure thinking around an event or issue to prepare for concept attainment/ Mind Maps or Concept Maps?
-
- Consolidate / review what has been learned?
- Other?
  _____
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☐ At what level do you want the discussion to be at in terms of Bloom's taxonomy? (attached) What verbs are you using that indicate this level?

☐ Group students:
- In smaller groups that might feel safer?
- In larger groups that generate more information?
- According to varied ability? Random groupings? Numbered heads?
Hand out the assignment with the place mat.

☐ Students work alone first. How long do you want this to last? Do students have the skill of respecting the learning time of others quietly? If not, what can you do to pre-teach the skill?

☐ Students share information with their group. Results are recorded in the centre of the page.
- How structured will the sharing be?   Round Robin? Three-step Interview?
- How much time and in what order?
- How will accountability for listening be built?
- Will any formal group roles be assigned such as 'recorder'?
- Is the primary purpose here listening, or probing deeper as each speaks, or both?
- What pre-skills need to be taught to make this effective? (active listening? Questioning? Critical thinking? Effective communication?)

☐ Sharing then takes place between groups. This can be done with Walkabout, Round Robin, reporting to the whole class or a number of techniques depending on your purpose or time.

- Who will speak for the group?
- Again, how will accountability be built in?
- How will note taking take place so all have the results of the class?
- How will a safety net be created for the very shy, etc.?

☐ How will you assess the process? What criteria will you use?   Are students aware of your criteria for assessment?

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Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

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                    X

X   X

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        X

X   X   X   X

X   X   X   X

X   X   X   X

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PMI: Positive, Minus, Interesting: A Thinking Organizer

PMI assists in making wise decisions, critical thinking (analysis) and evaluation.
It invites exploration of an issue from the point of view of what will or won't work.

- 'Positive' refers to reasons why something is a good idea or decision
- 'Minus' refers to why something won't work or is unwise
- 'Interesting' usually refers to the position or action one takes having balanced out the Positives and Minuses

PROCESS:

- Generate / Brainstorm information around a topic / issue
- Use a PMI organizer to complete the paper process

Positive	Minus	Interesting

Other Considerations:

☐   Consider tying in PMI to Place Mat as follows:
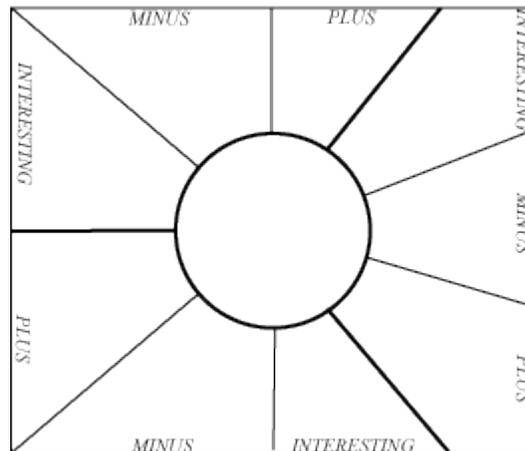
☐   PMI could also work well with *Think, Pair, Share*

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EBS: Examine Both Sides: A Thinking Organizer

EBS is connected to critical thinking, the search for truth.
It is a pre-skill for debating or for Academic Controversy.
It encourages students to look at both sides of an issue.

PROCESS:

☐   What is the point of the lesson?

- To understand both sides
- To apply their new found understanding to another form such as an essay?
- To evaluate a piece of writing on the subject?
     In other words, this can be a lesson in itself, or form a foundation for further objectives.

☐   How can you generate a statement / question which allows for equal exploration of both sides of an issue?   Read your statement / question carefully.

- Is it bias free or equally biased for both sides?
- Does it set reasonable parameters on the dimensions of the exploration (ie. Not too wide, not too narrow)?

☐   Which organizer such as PMI, Venn Diagram etc. is most appropriate for the type of content being explored?

☐   How can the class best be organized? Quiet seat work? Pairs? Groups?

☐   What is the most helpful way of reporting their findings?

☐   How will I know that they really do understand both sides of the issue?

☐   What criteria will you use to evaluate the understanding?

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FISH BONE: A Graphic Organizer

Fish Bone is an organizer used in problem solving or to identify and organize factors. It is a more sophisticated way of Brainstorming or CAF (Considering All Factors).

Uses:

☐   Alternative way of generating topics and subtopics for essays

☐   Exploration of an idea. Eg. Why do people bully others? Causes of a war, reasons why we need to move away from hydrocarbon consumption…

PROCESS:

☐   The organizer now helps students to organize the ideas into types of classifications of main ideas and sub ideas (analysis / evaluation).

☐   The head (circle) of the bone provides the issue or idea that acts as the focus for the thinking. Framing the question / statement is essential in providing the direction for the exercise.

☐   The squares are the classifiers, or main ideas. Do you wish to provide these initially, or should students generate their own? Or a combination of the two?

MATERIALS:
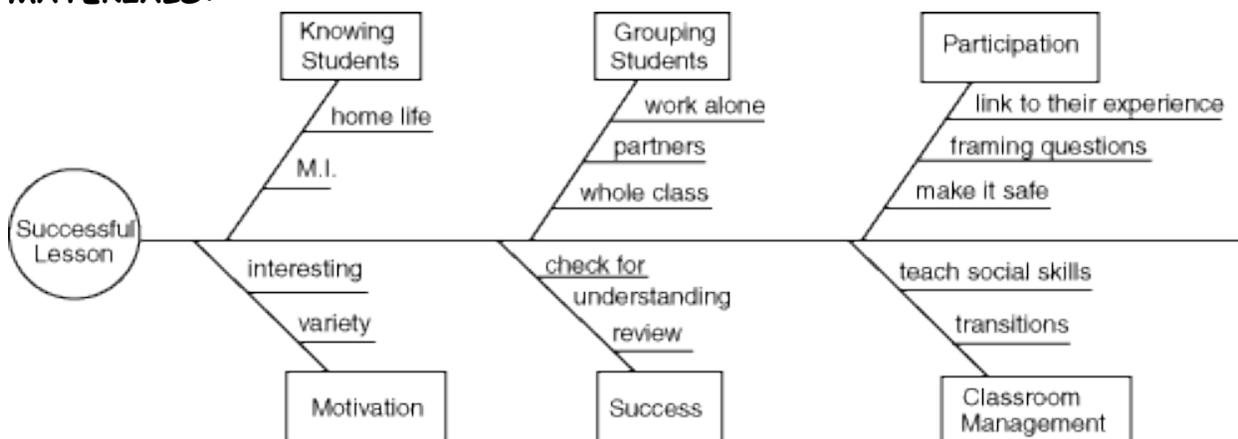
Adapted from Beyond Monet The Artful Science of Instructional Intelligence, Barrie Bennett / Carol Rolheiser

VENN DIAGRAM: A Graphic Organizer

- Operates at the analysis level of Bloom's Taxonomy
- There is more than one type of Venn diagram
- They are particularly powerful when used in combination with tactics such as: Numbered heads, Walk About, Three Step Interview, Place Mat…

USES:

☐ Assist in concept formation / attainment

☐ Assist in organization of ideas

PROCESS:

☐ Statement / question framing to allow enough room to explore an issue / topic / concept thoroughly and yet, to set a reasonable framework around the expectations.

☐ Will you give students the items and use the Venn Diagram to help them to classify? Or will students be generating the ideas?   If ideas are student generated, how will you check for accuracy, completeness and understanding?

☐ Is the diagram the end product or a lead in to another process?

Types of Venn Diagrams:
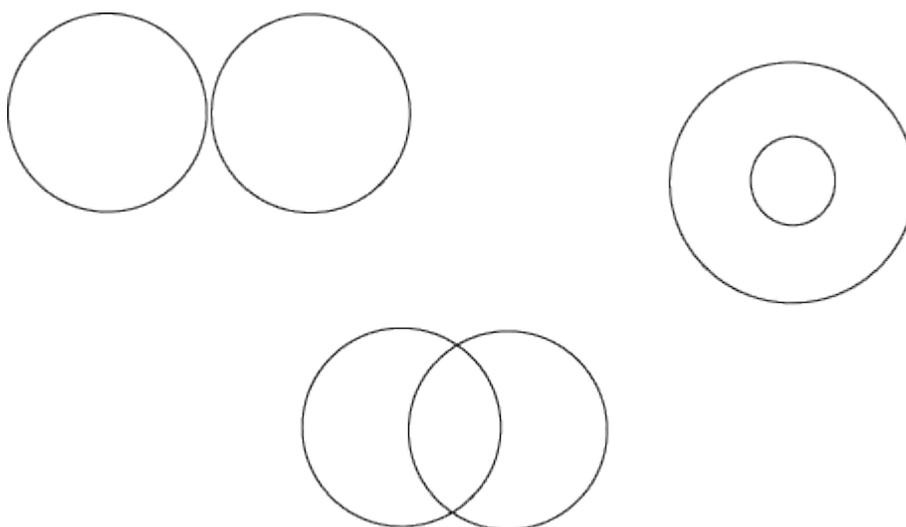
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NUMBERED HEADS: A Group Organizer

- *Can increase student accountability without increasing stress when used in combination with other tactics: Think, Pair, Share, Place Mat, PMI, EBS, ThreeStep Interview, Insider / Outside*
- One of simplest and useful of group tactics
- It simply means to have groups number off (1,2,3…) or letters (A, B, C…)
- Assists in initiating a transition or handing out, collecting materials

VALUE LINES: A Thinking / Emotions Organizer

- A simpler version of Four Corners; uses a continuum between opposites to place a student's thoughts / emotions
- Used in combination with other tactics and strategies
- Eg. At the beginning and end of a lesson to see how students positions have shifted, in combination with Think, Pair , Share to examine why students have chosen their particular spot on a continuum, Academic Controversy, Mental Set creation at the beginning of a lesson or a form of Closure
- Opposite ends can consist of:
- Agree --------------Diagree
- Is an example of ------------------Isn't an example of
- Should -------------Shouldn't
- Etc.

WALK ABOUT: Building Relationships

Literally, a student in a group joins another group to provide cross pollination of ideas.
- Links more complex processes in collaborative learning
- Builds individual accountability, physical movement, and variety into the learning process

Cooperative Learning

"Group work that is not structured thoughtfully is one of the least effective approaches in the teaching and learning process." P. 141

Things to Think About:

- Cooperative learning is complex; start small
- Learning is socially constructed; we seldom learn in isolation
- Everyone in a group needs to be accountable for learning
- Pre-skills need to be overtly taught: social skills, communication, and critical thinking
- Groups need to process how they function as a group
- Not all material is suited to group work;   choose carefully
- Groups of 2 – 4 are most effective
- Think about who will be working with whom
- Needs to be integrated with other strategies
- Success depends on safe classroom environment

Examples of Cooperative Learning:

Jigsaw, Group Investigation, Team Analysis, Academic Controversy, Think Pair Share, Inside Outside Circles, Three-Step Interview…

When setting up Cooperative Learning, in your planning, consider:

- The structures you will be using
- The proccess you will be needing and using
- How you will make the classroom safe

Cooperative Learning: Some Reasons for Use

- Research shows that, done well, it is a highly effective mode of learning
- Research shows that intelligence is greatly affected by social interaction
- Interpersonal intelligence is a powerful predictor of success
- Dialogue is a powerful way to resolve the revolution like behaviour of society
- Conflict resolution skills often determine how long school staff remain effective
- Where else will students pick up quality social, communication and critical thinking skills
- Some students learn best by this mode (Learning Styles, Multiple Intelligence)
- Cooperative learning has significant transfer to the 'real world'

Johnsons' 5 Basic Elements of Effective Group Work

1. **Individual Accountability**

- Each student is responsible for their own learning

2. **Face to Face Interaction**

- Groups of 2 – 4 and facing each other
- Rearrange the room if necessary!

3. **Collaborative Skills** (skills embedded into the group work process that may need to be taught overtly)

- Social skills
- Communication skills
- Critical thinking skills

4. **Processing**

- The need to reflect and assess on the group's effort – academically and socially
- Needed for development over time

5. **Positive Interdependence**

- Students are supportive of each other's learning
- Needs to be taught
- Johnson identifies 9 ways to encourage this

Johnson's 9 Positive Interdependencies:

1. **Goal:**   Provide a clear and meaningful goal or task
2. **Role:** Roles are clear without being inhibiting
3. **Resources**: sharing
4. **Incentive:** getting perks for working well together
5. **Outside force:** competing against standards or for prizes
6. **Environmental:** structure the physical environment carefully
7. **Identity:** students design a group name or logo
8. **Sequence:** each student must complete his task so that the group can put together to various elements to create a whole
9. **Simulation:** role playing, often to deal with social skills
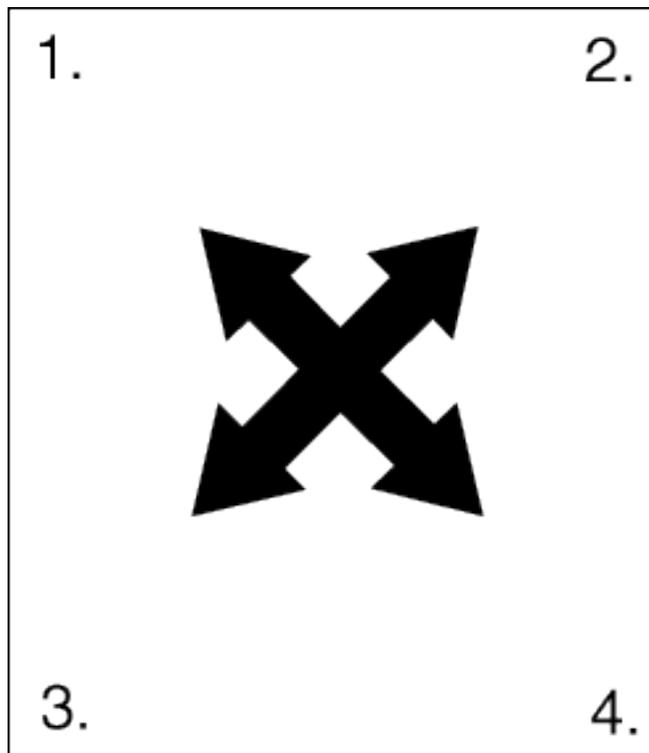
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INSIDE / OUTSIDE CIRCLES: Cooperative Learning Tactic

Inside / Outside Circles

- facilitates dialogue
- builds community
- provides for movement and interaction

Method:

- [ ] It can be employed with groups of 6 or more ($\frac{1}{2}$ in $\frac{1}{2}$ out).
- [ ] Place students in two circles – one circle within the other.
- [ ] Students face each other between circles.
- [ ] Put a question on the board
- [ ] Ask students to think about it; allow reasonable wait time
- [ ] Then say, "Person on the inside, tell the person on the outside how you would attempt to solve it. When you are finished sharing, say, 'pass', and then the outside persona will share or extend the thinking of the inside person.
- [ ] When finished, outside people rotate one to the left or right.
- [ ] Now they are ready for the next question.

Considerations:

- [ ] How will you deal with students who are weak auditory learners?
- [ ] If you choose to a reporting system, how will you set it up?

  E.g. Group B, pair 2, outside, what is your response…
- [ ] How will you build in accountability?
- [ ] Will students have the right to pass on responding?
- [ ] If you have an odd number, have 2 students act as one on the outside circle.

Diagram:
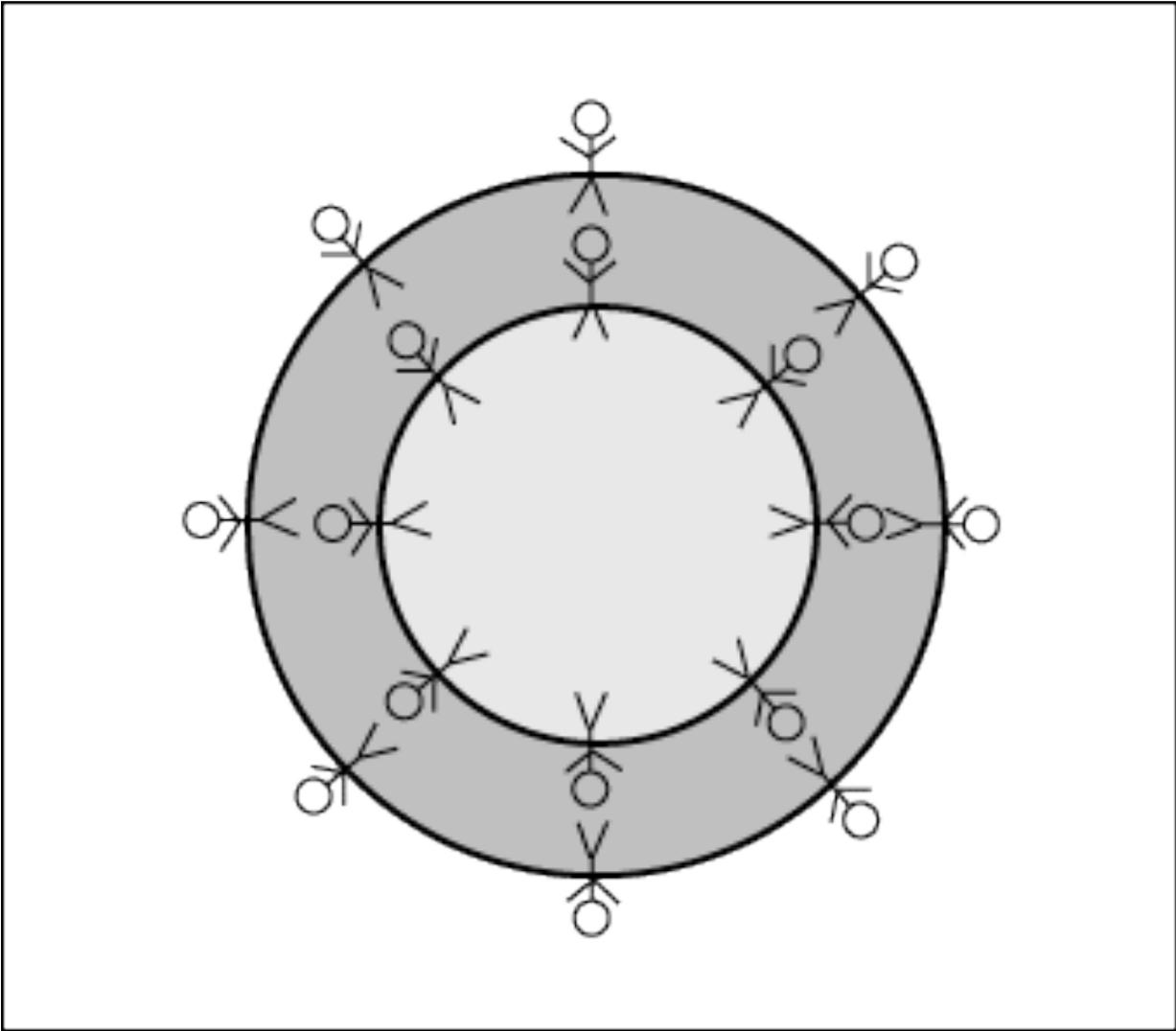
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FOUR CORNERS: A Cooperative Learning Tactic

This is a useful tactic that can precede debates:

- [ ] Begin with a statement, issue or question
- [ ] Label your corners: Strongly Agree, Agree, Disagree, Strongly Disagree
- [ ] Students are given a specified period of quiet time in which to make up their minds. At this stage, dialogue is not allowed.
- [ ] Students move into the corner which best represents their view of the issue
- [ ] In small groups, students discuss why they moved to the corner they did and record their combined reasons.
- [ ] Students then report on their reasons from each corner

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THREE-STEP INTERVIEW … K TO ADULT: A Cooperative Learning Tactic

❑ Encourages students to share their thinking, ask questions and take notes
❑ Works best with 3 per group, but can be modified for groups of 4
❑ Assumes a knowledge base is in place about which the Interviewee can talk. This may be from prior research, a report, homework…

Preskills:

☐ Asking questions: types, levels of difficulty, sequence, open Vs closed questions…

☐ Note taking skills

☐ Interviewee skills: are there questions that you should not answer? What if you don't understand the question?   Etc.

Method:

☐ Assign a letter to each student
A = Interviewer
B = Interviewee
C = Reporter

☐ The roles rotate after each interview.

☐ Gauge time needed for each interview

☐ When they are done, they do a Round Robin and share the key information they recorded when they were Person C: the Report

THREE STEP INTERVIEW FORM

Interview 1:   **Name:** _____

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Interview 2:   **Name:** _____

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Interview 3:   **Name: :** _____

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Round Robin: Key Idea(s) from Interviews:

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Graffiti… Grade One to Adult: A Cooperative Learning Tactic

Graffiti is a creative brainstorming process that involves collecting the wisdom of all or most of the students in the class.

Method:

- [ ] You may wish to begin by introducing the concept of Graffiti; it helps make the process more meaningful for students

- [ ] Place students into groups of three or four

- [ ] provide a large sheet of paper (station) for each group

- [ ] Each piece of paper has a topic / question in the middle (can be same or different for each group

- [ ] Students get a reasonable amount of Wait Time to think

- [ ] Then a specified amount of Record Time to write down their answers on the sheet

- [ ] Then the group stands up and goes to another station and adds their information to the information already there

- [ ] They should NOT read info already there. Duplication is irrelevant, and often can simply indicate that info is important.

- [ ] The process continues until all groups have visited all stations

- [ ] When they return, they now have the collective wisdom of the class

Considerations:

- [ ] Consider giving each group different coloured pens. When inappropriate comments happen, and they do, it is easier to trace.

- [ ] Know how you will deal with inappropriate comments before you begin

Sample:
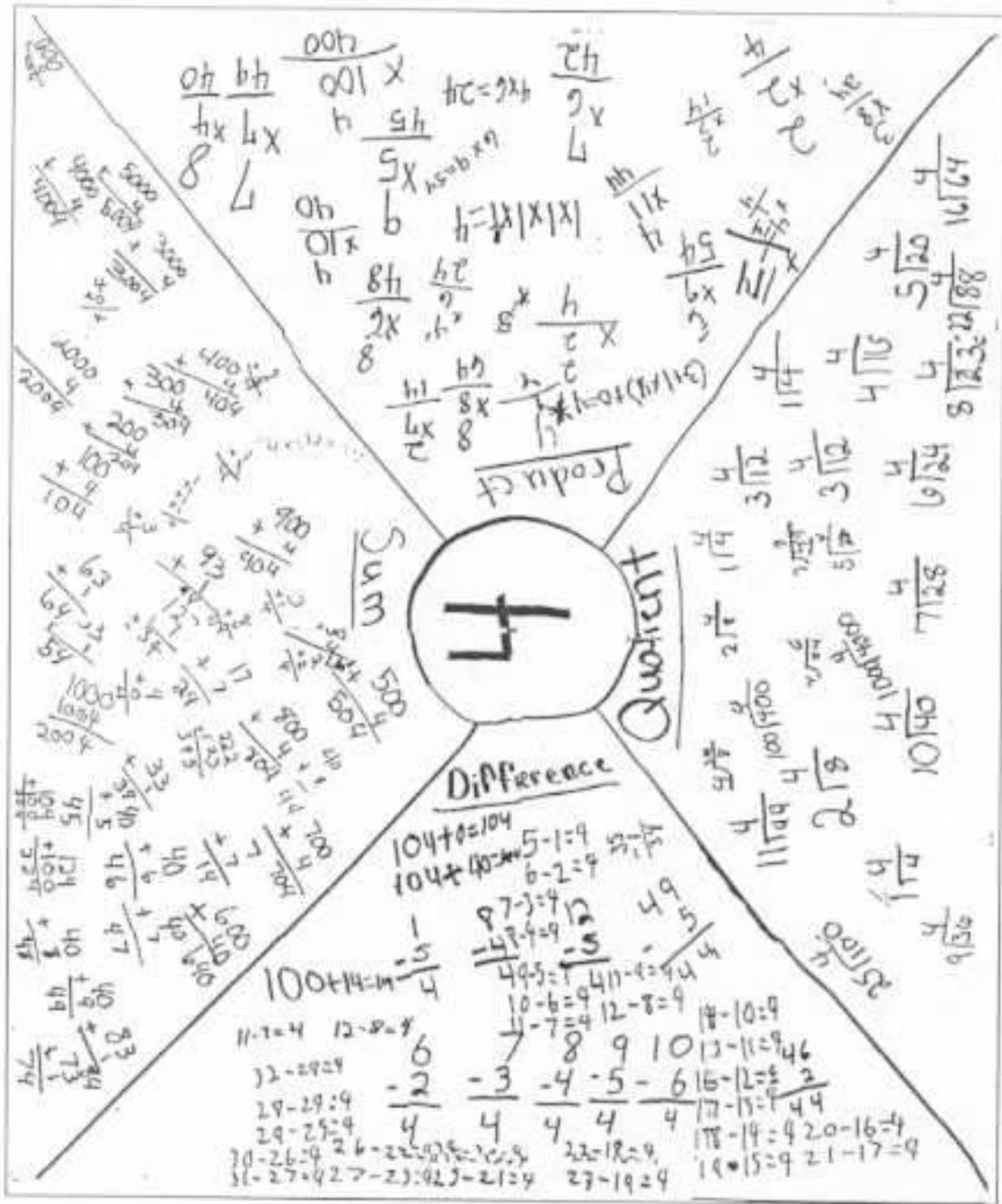
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Teams – Games – Tournament: (TGT): A Cooperative Learning Strategy

TGT is a strategy usually used to check for understanding information, for reviewing and test preparation. It works best for information that is relatively objective.

Method:

☐   Students work in a Home Teams of three and review the information learned.

☐   They then break into Tournament Groups where one student from each group gets together with two students, each from one other group.

☐   Tournament groups then responds to a number of questions. The questions are placed on cards with the answers on the back. (like Trivial Pursuit)

☐   When they have completed the questions, or the time is up, they return to their home team and add up their individual tournament scores. The group with the most points receives an incentive.

Considerations:

☐   Are student notebooks adequate for the initial review phase of the strategy?

☐   Initial choice of teams can be crucial to perceived fairness of the process. Should this be done randomly or with specific intent, such as making sure each review group has at least one strong student in it to help weaker students?

☐   Who is to keep score? Have the social skills of integrity and honesty been overtly taught?
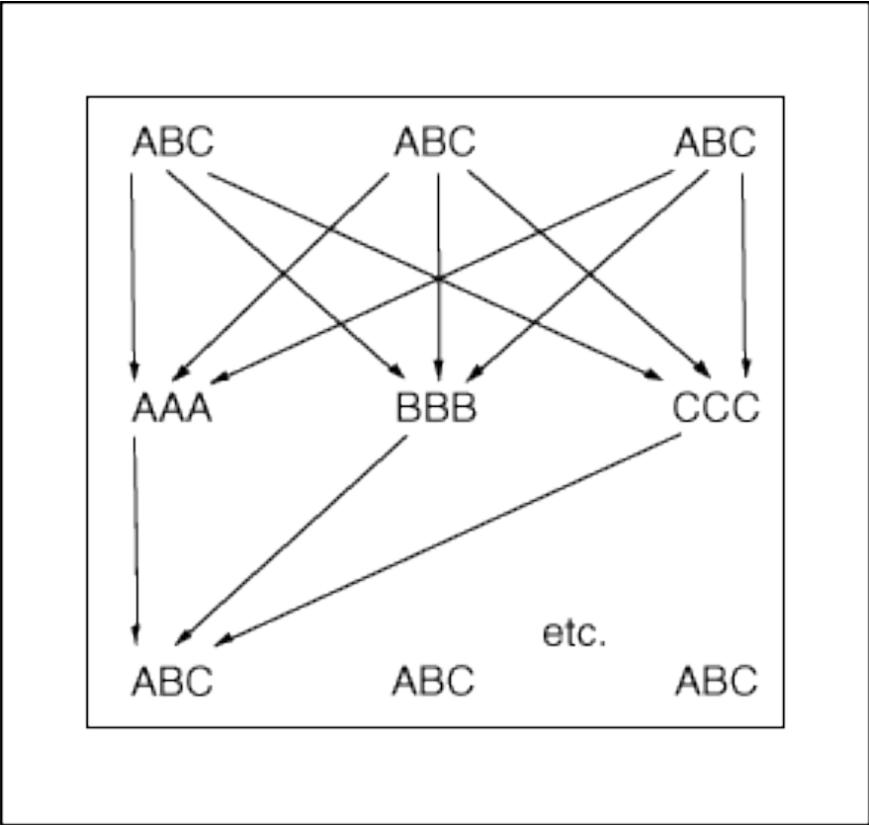
Sample Recording Sheet:

Team Name	Question Number								
	1	2	3	4	5	6	7	8	Total

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

CONCEPT ATTAINMENT

David Perkins' work on Knowledge as Design:

1. What are the critical attributes of the concept?
2. What are the purposes of the concept?
3. What are the model cases of the concept?
4. What are the arguments for learning the concept?

Bruner's Concept Attainment Method:

Phase 1: Present the focus statement and the data set.

☐   What is your focus statement?

☐   How will you present the data set? All at once or one at a time?

☐   Students compare the attributes of the YES examples and contrasts them with the NO examples

☐   What medium will you use to present the data set? Picture? Overhead, objects, role playing, chart, etc.?

☐   Students generate and test their hypothesis

☐   When will you decide to present the tester to check for understanding?

☐   When will you decide to stop presenting the data and move into phase two?

Phase 2: Sharing the hypothesis and their thinking

☐   How will you have the students share their hypotheses and thinking? Individually, randomly, pairs, teacher selected, individual from group etc.?

☐   How will you deal with incorrect or partially correct hypotheses? Remember that students may see things you didn't realize were in the data set or simply err in their analysis.

☐   When students have determined the essence or the critical attributes of the concept, how will you start to move to Phase 2? This is an essential element

Phase 3: Application or extension of the concept

☐   Students describe their thoughts about how their thinking progressed during the analysis of the date

☐   How will you make this concept come alive so that students understand the purpose of the concept and its value

☐   What questions could you ask?

☐   What level of Bloom's Taxonomy are your questions?

☐   Could you insert any other strategies or critical thinking skills at this point to extend their thinking?

Common Fallacies in Inductive Reasoning

1. *Hasty or Sweeping Generalizations*
   This refers to the making of a judgement or broad statement based on limited information
2. *The Either – Or – Fallacy*
   This refers to polarizing an issue when in fact other positions or both positions are possible.
3. *The Unknowable Statistic*
   This refers to the making of a statement based on a statistic that is impossible or unrealistic to calculate.
4. *Inconsistencies and Contradictions*
   This refers to arguing a point while going against or actin in a way that negates your argument.
5. *The Loaded Question*
   This question does not allow for any answer but the one the person who asked it wants; a dead end question.
6. *False Causation*
   This involves invoking a cause / effect relationship when it is at best a correlation or a coincidence.
7. *The False Analogy*
   This occurs when a comparison is made which is not accurate.
8. *The Slippery Slope (Domino Effect)*
   This implies that if one thing happens, then all these other things will happen as a consequence
   .

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence,* Barrie Bennett / Carol Rolheiser

Taba's Inductive Thinking Strategy: Concept Formation

With Concept Attainment, the teacher controls the data set and its classification. With Concept Formation, students control the classification of the data set and often even the generation of the data set.

Phase 1   Concept Formation

☐   Enumerate or list the date (teacher or students)

☐   Group the data

☐   Label the groups

Phase 2   Interpretation of the Data

☐   Identify the critical relationships between groups

☐   Explore those relationships in a cause and effect process

☐   Make inferences from those explorations

Phase 3   Application of Principles

☐   Predict consequences, explain unfamiliar phenomena, hypothesize and predict

☐   Explain or support the predictions, etc.

☐   Verify the predictions and assess the practicality, strengths or weaknesses, logic.

Common Fallacies in Inductive Reasoning

1. Hasty or Sweeping Generalizations
   This refers to the making of a judgement or broad statement based on limited
   information

2. The Either – Or – Fallacy
   This refers to polarizing an issue when in fact other positions or both positions are
   possible.

3. The Unknowable Statistic
   This refers to the making of a statement based on a statistic that is impossible or
   unrealistic to calculate.

4. Inconsistencies and Contradictions
   This refers to arguing a point while going against or actin in a way that negates your
   argument.

5. The Loaded Question
   This question does not allow for any answer but the one the person who asked it wants; a
   dead end question.

6. False Causation
   This involves invoking a cause / effect relationship when it is at best a correlation or a
   coincidence.

7. The False Analogy
   This occurs when a comparison is made which is not accurate.

8. The Slippery Slope (Domino Effect)
   This implies that if one thing happens, then all these other things will happen as a
   consequence.

Mind Mapping

Mind Mapping helps the learner to connect existing knowledge with new knowledge; this makes knowledge dynamic rather than passive. As a framework tools, it assists in the formation of connections, in organizing concepts and the relationships between concepts. It is an analytical process that can be used: to take notes, to study for an exam, to brainstorm, or to make connections between ideas.   It enhances memory.

Essentials of Mind Mapping:

☐　The central image represents the subject being mapped

☐　The main themes radiate like branches from that central image

☐　Those branches have a key image or key word printed on an associated line

☐　The branches have a connected structure

　　Optional: Use of colour and codes

Materials:

☐　A sheet of paper for each student or group

☐　Coloured pens or crayons, even scissors and glue if pictures will be used

Process:

☐　Select a topic. It helps to think of a visual that capture the essence of that topic and use it in the centre

☐　Brainstorm the key ideas related to that topic
- Record all ideas
- Group into common categories
- Draw a picture or symbol that represents each of the key ideas brainstormed
- Position those visuals around the outside of the visual in the centre of the map
- Put in the key word then connect the key words to the centre
- Flow with ideas radiating out from each of the key ideas and continue the above process

☐　Reflect alone, with a partner, with a small group or with the class. Talk through the journey you took to conceptualize the key ideas related to the topic. Explore the relationships between different aspects of the map-

Sample Mind Maps:

university student's second attempt at Mind Mapping

grade eight student's second attempt at Mind Mapping

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

Rubric for Mind Map Performance Levels

CRITERIA	PERFORMANCE INDICATORS (Observable descriptors indicating extent to which a criterion is met.)			
	Level 1	Level 2	Level 3	Level 4
Central image	Not clear; difficult to separate from other information	Present; not eye catching or memorable	Clear; use of picture or image that relates to key idea	Stands out; meaningfully grasps the key idea through metaphor or humour
Ideas radiate out from central image and from most to least complex	Little to no indication that ideas are connected to and radiating out from centre, from most to least complex	Ideas radiate out from centre; some confusion as you follow ideas moving from most to least complex	Ideas clearly connect to central image and ideas, and for the most part move from most to least complex	Ideas clearly connect to central image and ideas consistently and accurately shift from most to least complex
Ideas have key images or key words	Little to no evidence of key images. May have a few keywords or vice-versa	Images and keywords are evident, but either too few or imprecise	Images and key words clearly show an understanding of the content, although not that memorable	Dynamic use of images and keywords. They clearly connect to central image. See use of metaphor, humour, cut-outs from magazines, clipart, etc.
Colour or codes or links used to illustrate connections between ideas	Little to no use of colour, codes, or links to illustrate connections between ideas	Obvious attempt is made to use colour, codes or links to enhance clarity and memory. Still a bit confusing.	Clearly uses colour, codes, or links to clarify connections and to assist with memory for most aspects of Mind Map	Effectively uses colour, codes, or links to meaningfully clarify connections for all aspects of Mind Map
Depth of coverage	Insufficient coverage of content covered	Shows a basic level of coverage of key ideas but little extension of ideas	Shows a solid grasp of most of the content and shows extensions of most key ideas	Shows a solid grasp of all the content covered. Extensions of the key ideas show a deep understanding of that content

Note: this is one teacher's suggestion for evaluation –
please feel free to design your own or adapt this one.

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence,* Barrie Bennett / Carol Rolheiser

Concept Maps

Concept Mapping helps the learner to connect existing knowledge with new knowledge; this makes knowledge dynamic rather than passive. As a framework tools, it assists in the formation of connections, in organizing concepts and the relationships between facts, concepts and ideas.

It is an analytical process that can be used: to take notes, to study for an exam, to brainstorm, or to make connections between ideas. It enhances memory.

Essentials:

- [ ] Start with a major term or idea from which the next term or idea extends either in a hierarchical or radiating format – Concept Maps usually start at the top of the page.

- [ ] Shift is from more complex to less complex idea or major to minor

- [ ] Connecting lines are drawn between concepts

- [ ] Linking words are placed on the lines stating the relationship between concepts

- [ ] Cross links can be made between one part of the concept hierarchy or classification and another

Optional: Colour can be used to follow relationships
Examples of concepts can be added

Materials:

- [ ] A sheet of paper for each student or group

- [ ] Post It Notes or index cards

- [ ] Coloured pens or crayons, even scissors and glue if pictures will be used

Process:

- [ ] Brainstorm, individually or in a group, the key ideas

- [ ] Students put their ideas onto cards or post-it notes

- [ ] Sort / classify these cards, looking for relationships between ideas

- [ ] Paste or transfer the ideas onto the large piece of paper

- [ ] Draw lines between concepts and place words on the lines that illustrate their relationships

- [ ] Look for cross links between different concepts

Sample Concept Maps

university student's first attempt at a Concept Map

Yolanda Chow
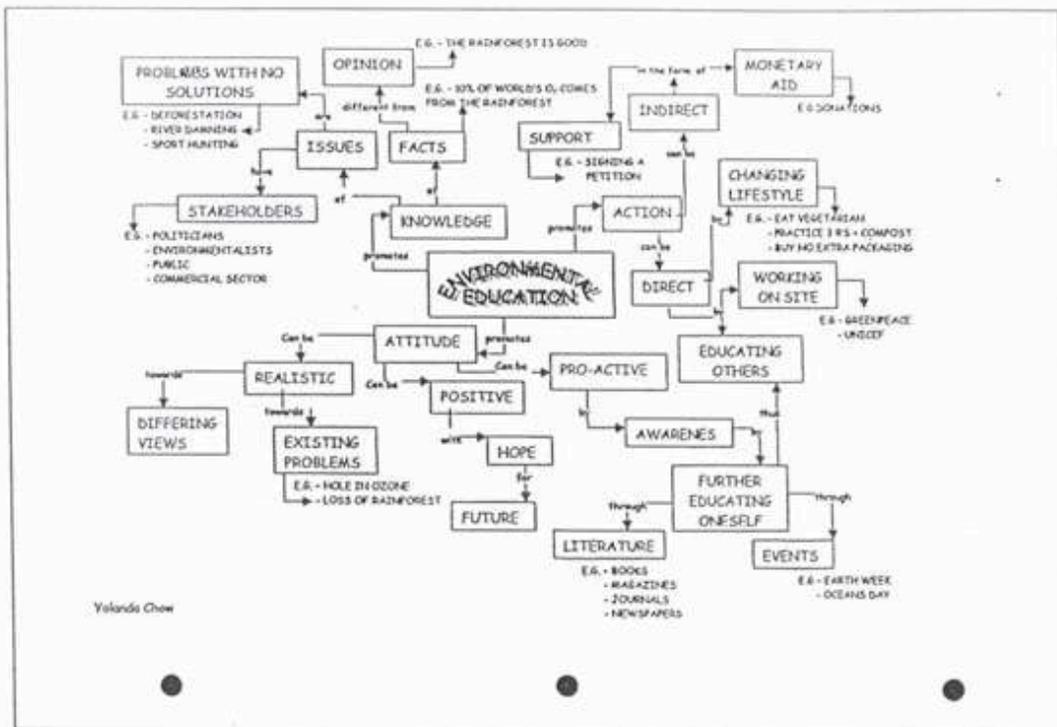
grade 11's first attempt at a Concept Map related to what he knew at the start of the unit
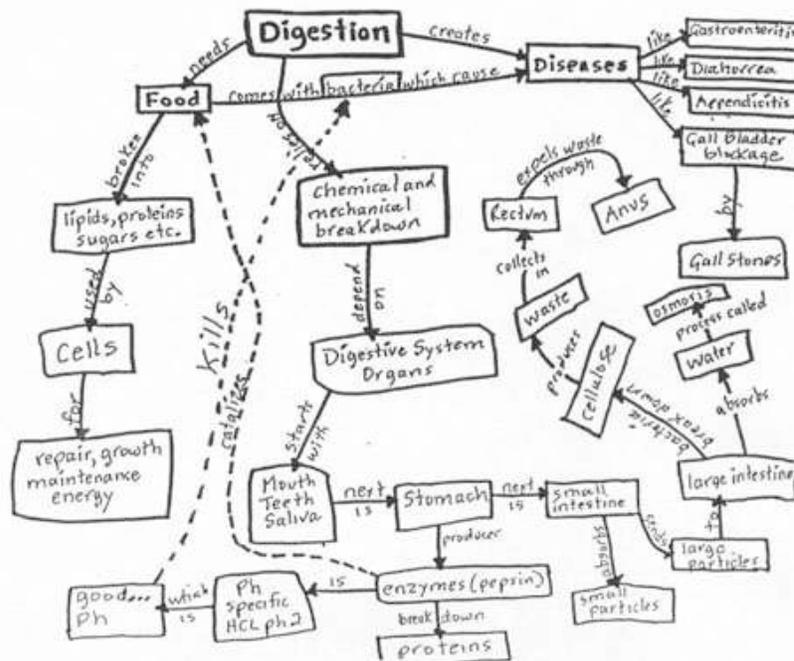
Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

Sample Rubric for Evaluating a Concept Map

Performance Levels

Performance Indicators	Level 1	Level 2	Level 3	Level 4
Concepts	• Insufficient number of concepts selected relating to topic • Arrangement of concepts illustrates no understanding of conceptual relationships	• Minimal but acceptable number of concepts selected, with some relationships to the topic • Arrangement of concepts demonstrates simple understanding of subordinate conceptual relationships	• Most concepts relating to topic were selected • Arrangement of concepts demonstrates an understanding of subordinate conceptual relationships	• Most concepts and all significant concepts selected and they clearly relate to the topic • Arrangement of concepts demonstrates complete understanding of subordinate conceptual relationships
Hierarchical Structure	• Concepts are displayed in a linear sequence. Little or no sense of hierarchical structure	• Limited hierarchical structure used	• Concepts connected in a hierarchical structure	• Concepts connected in a hierarchical structure leading to more specific concepts
Linkages	• Some basic relationships indicated by connected lines • Linking words are simple and repetitive	• Straightforward relationships connected with linking words • Linking words show variety	• Most relationships indicated with a connecting line and labeled with linking words • Linking words are accurate and varied	• All relationships indicated by a connecting line and accurately labeled with appropriate linking words • Linking words are expressive and purposeful
Cross Links	• Cross links not used	• Few cross links are used to illustrate minimal connections	• Cross links used to reflect straightforward connections	• Cross links show complex relationships between two or more distinct segments of the concept map

Designed by: Shirley Smith, Bev Elaschuk

Feel free to adapt this rubric or create your own.

Academic Controversy: A Complex Learning Strategy

- ❑ Encourages higher level thinking (analysis, synthesis and evaluation, for example)

- ❑ *Pushes the ability and willingness to consider opposing perspectives*

- ❑ Extends knowledge and clarity around issues

- ❑ Integrates the head and the heart in the learning process

- ❑ De Bono's Six Thinking Hats (tactic) is useful in the process

- ❑ Precursor to debating

Necessary Preskills: because this strategy is a complex strategy, a large part of its effectiveness relies on prerequisite skill on the part of both teacher and students.

☐ The classroom has been established as a genuinely psychologically 'safe' classroom in the eyes of the students.

☐ The teacher is attending to David and Johnson's work, specifically:
- ▪ Individual accountability
- ▪ Face to face interaction
- ▪ Collaborative skills
- ▪ Processing group functioning
- ▪ Positive interdependencies (9)

☐ Students must be able to demonstrate the following Collaborative Skills:
- ▪ Taking turns
- ▪ No put downs
- ▪ Suspending judgement
- ▪ Actively listening
- ▪ Paraphrasing
- ▪ Disagreeing in an Agreeable Way
- ▪ Disagreeing with the idea, not person
- ▪ Accepting and extending the ideas of others

☐ Students are skilled at working in group structures such as Think Pair Share, Place mat and Three-Step Interview

Academic Controversy: 8 Steps

1. Identify the Controversy

☐   State it in the positive (Be it resolved that all vehicles should be red.)

2. Create Groups

☐   Groups of 4 – 6
☐   Letter the students AA/BB or PRO / CON
       (Be careful about putting friends together or giving students choices according to
       initial positions; it is not advisable in this strategy)
       Number Heads within Groups: A1, A2, …B1, B2…
       A's are PRO first, B's are CON first
☐   Sit on opposite sides of room

3. Time to Plan

☐   Time given depends on complexity of material

4. Time for Each Group to Share

☐   Begin with group A
☐   Usually , about 60 – 90 seconds per group to present is sufficient.
☐   Groups need to be actively listening and taking notes
☐   No interruptions

5. Plan the Rebuttal

☐   Discussion of flaws in other groups' presentations

6.   Present the Rebuttal

☐   Begin with Group B, then A
☐   Again about 60 – 90 seconds per group

7.   Students Change Sides - Repeat Steps 3 to 6

☐   Students stand up and exchange sides of the room
☐   Repeat

8.   End with a Round Robin

☐   Here, individuals can discuss where they stand on the issue
☐   You may want to see if the class can reach consensus

Academic Controversy: Recording Sheet

Names:_____

CONTROVERSY: Be it resolved_____
_____
_____

PRO POINTS:
1. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

CON POINTS
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

CONSENSUS:
_____
_____
_____
_____

Order of Operations:
1. Groups of 4 or 6
2. Letter off AA(A(and BB(B)
3. Plan Opening Points
4. Present Opening Points
5. Exchange and Plan Disagreements
6. Present Disagreements Agreeably
7. Change Sides
8. Plan Opening Points (New Ideas or extending previous ideas
9. Present Opening Points
10. Exchange and Plan Disagreements
11. Present Disagreements Agreeably
12. Round Robin on Your Position
13. Attempt consensus
14. Share Group's Thinking

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

GROUP / TEAM ASSESSMENT

Complete the following questions as a team.

| | LOW | | | | HIGH |

1. Did all of the members of our group contribute ideas   1 2 3 4 5

2. Did all of the members of our group listen carefully   1 2 3 4 5
   to the ideas of other group members?

3. Did all of the members of our group encourage other   1 2 3 4 5
   members to contribute their thoughts and opinions?

9. Three ways that we helped each other learn the material:

_____

_____

_____

_____

10.a) One difficulty our group had was (explain fully):

_____

_____

_____

_____

Other Observations relevant to how you functioned as a team:

_____

_____

_____

_____

_____

Group signatures:

_____   _____

_____   _____

_____   _____

Team Analysis: A Complex Learning Strategy

- ❑ Encourages higher level thinking (analysis, synthesis and evaluation, for example)

- ❑ *Pushes the ability and willingness to consider and integrate opposing perspectives*

- ❑ Extends knowledge and clarity around issues

- ❑ Integrates the head and the heart in the learning process

- ❑ De Bono's Six Thinking Hats (tactic) is useful in the process

Necessary Preskills: because this strategy is a complex strategy, a large part of its effectiveness relies on prerequisite skill on the part of both teacher and students.

☐ The classroom has been established as a genuinely psychologically 'safe' classroom in the eyes of the students.

☐ The teacher is attending to David and Johnson's work, specifically:
- ▪ Individual accountability
- ▪ Face to face interaction
- ▪ Collaborative skills
- ▪ Processing group functioning
- ▪ Positive interdependencies (9)

☐ Students must be able to demonstrate the following Collaborative Skills:
- ▪ Taking turns
- ▪ No put downs
- ▪ Suspending judgement
- ▪ Actively listening
- ▪ Paraphrasing
- ▪ Disagreeing in an Agreeable Way
- ▪ Disagreeing with the idea, not person
- ▪ Accepting and extending the ideas of others

☐ Students are skilled at working in group structures such as Think Pair Share, Place mat and Three-Step Interview

Team Analysis: 5 Phases

Phase One: Pre-reading and Reflection on the Issue

☐ Teacher identifies an issue, and assigns reading to prepare students

☐ Individually, students pre-read and reflect on the material, perhaps in a learning journal

☐ Create groups of 3 – 4 and arrange them in a horseshoe, teacher sits in the middle

☐ Groups discuss the issue (about 4 – 5 minutes)

☐ You may give a quick comprehension quiz here to make sure students are ready to move to the more demanding portions of the process

Phase Two: The Presentations on the Issue

☐ Select one student to begin the presentations (Numbered Heads? Round Robin?)

☐ He / she may request information from their group members during the presentation.

☐ Members of other teams make notes to help remember that was said in the presentations. (Will you collect these at the end?)

☐ You may wish to put the key info on the board or chart paper so students have a map of their thinking (for younger grades or inexperienced presenters)

Phase Three: The Response to the Presentation

☐ After presentations, students take 3 – 5 minutes to prepare a response to the presentation or issue under examination.

☐ One of the teams is selected to reply critically to some aspect of the presentations or to extend the presentation by offering and insight or personal comment

Phase Four: The Teacher Response

☐ As soon as a groups have responded to the initial presentation, the teacher immediately and publicly assigns a mark and a rationale for that mark related to the quality of the contribution.

☐ Teacher explains the reason behind each assessment – students can appeal a mark. Marks of between 0 and 4 are awarded based on one or more of the following:
  ▪ Accuracy of the response
  ▪ Complexity of the response
  ▪ Originality of the insight

Phase Five: Responses by the Other Teams

☐ Each team adds to the communal interpretation till all have responded.
☐ Will each team have a spokesperson, or will each member speak?
☐ A second round of responses by students now begins until they've achieved a desired level of thinking or exhausted their thoughts.

Adaptations:

☐ In Phase 2, have several groups present initially and assign marks (Phase 4) after each presentation
☐ Then move into Phase 3 and provide time for all groups to rework their response
☐ Shift to Phase 5 and have groups present
☐ Again teacher provides a mark, shifting back and forth between the last three phases.

Considerations:

☐ To what extend do you wish the process to be formal – students stand when they report?
☐ What role should marks play? Evaluative, or as a form of assessment that helps students gauge the quality of their responses and the marking criteria?
☐ Will students have the right to pass or must everyone contribute?

Team Analysis: Directions for Students

Phase One: Pre-reading and Reflection on the Issue

❑ Students individually pre-read, reflect
❑ In their group, have a brief discussion (4 - 5 minutes) on the issue to be discussed.

Phase Two: The Presentation on the Issue

❑ One student from one group is selected to lead off with a presentation.
❑ The presenter can request information form his or her group members during the presentation
❑ Members on other teams make notes to help remember what was said in the presentations.

Phase Three: The Response to the Presentation

❑ The teams take 3 – 5 minutes to prepare a response to the presentation or to the issue under examination
❑ One of the teams is selected to reply critically to some aspect of the presentation or to extend the presentation by offering an insight or personal comment
❑ Remember to apply the communication skills of Disagreeing Agreeably and Accepting and Extending the Ideas of Others

Phase Four: The Teacher's Response

❑ The teacher assigns a mark and rational for that mark related to the quality of the contribution

Phase Five: Responses by the Other Teams

❑ Each team in turn adds to the developing interpretation
❑ Once all teams have responded and the issue or topic is clarified, and the assessment criteria are shared, the a second round begins
❑ In the second round on the same or different topic, all students on each team must make a comment before any team member can speak for a second time.

Adapted from Beyond Monet The Artful Science of Instructional Intelligence, Barrie Bennett / Carol Rolheiser

deBono's Six Thinking Hats: A Complex Strategy

White Hat
- Represents information (white paper)
- It is applied to direct thinking into an area
- Attends to info that is present and info that is missing
- Sharing statistics, or ideas or asking for information is typical of this hat

Red Hat
- Deals with feelings, intuition and emotions (red suggests fire and warmth)
- You share feelings and intuitions and emotions without having to justify why

Black Hat
- Use caution (black like a judge's robe)
- Stops us from doing something harmful, wrong, too expensive etc.
- Points out risks, hazards, the roadblocks
- Explains why something will not work
- Shows weaknesses and makes assessments

Green Hat
- Green suggest life (green vegetation)
- Offer suggestions, make proposals and explore alternatives
- Look outside the box for solutions
- How to add to something, or make modifications
- Creative suggestions

Blue Hat
- Thinking about our thinking (blue sky)
- Bring a sense or order and sequence to what is occurring
- Often used at beginning and end of a discussion
- Used when things get confused
- Can be used to decide the sequence of hats, or when to exchange hats or how to summarize…

Yellow Hat
- Makes an effort to find the values and benefits of an idea (sunny yellow)
- Seeks good points even if you don't like the overall idea

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

Multiple Intelligences Theory

❑ *Linguistic:*

- Ability to use words effectively when speaking and writing
- Being sensitive to the power, meaning and flow of words

❑ *Logical – Mathematical*

- Ability to discern numerical patterns
- To effectively think with numbers
- Classify information and make inferences / reason

❑ *Bodily – Kinesthetic*

- Ability to sense, interpret and create patterns involving the whole body

❑ *Interpersonal*

- Ability to interpret and accurately respond to the moods/ behaviours of others

❑ *Intrapersonal*

- Understanding one's own feelings
- Aware of personal strengths and weaknesses
- The ability to act on that understanding to guide behaviour

❑ *Musical*

- Ability to appreciate and play with rhythm, pitch, and timbre
- Appreciation of musical for / expressiveness

❑ *Spatial*

- Strength in visual spatial reasoning
- Sensing patterns and orienting oneself
- Thinking based on those patterns

❑ *Naturalistic*

- Ability to make sense of nature's complexities
- To classify aspects of nature and sense relationships within and between those patterns

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

Emotional Intelligence

- Recognizes emotions – self awareness

- Manages moods – self control

- Motivated

- Empathic

- Good social skills

Cognitive resources are connected to emotional information and can direct their course.

Students need to feel safe in order to develop Emotional Intelligence.

How can we create that safety?

_____

_____

_____

_____

_____

_____

_____

Learning Styles

Learning styles differ greatly from person to person, and so, the teacher needs to consider:

- The physical environment
- Formal or casual
- Concept to examples or examples to concept (Bottom up / Top down learners)
- Perceptual modes: visual, auditory, tactile and kinesthetic
- Concentration spans
- Preference for individual or social learning
-
-

And there are almost as many as there are learners.

We begin to learn from personal meaning to integration of new material into personal knowledge:

Step One: Feeling / perceiving to find meaning
- Relate knowledge to student experiences and prior learning
- Creating links
- Making the material meaningful and interesting

Step Two: Reflecting / Processing to find conceptualization
- Allow for discussion
- Allow time

Step Three: Thinking / perceiving to solve the problem
- Encouragement to apply what is learned using inquiry methods
- Coaching

Step Four: Doing / processing to transform
- Assist in the integration of ideas

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence,* Barrie Bennett / Carol Rolheiser

Brain Research

1. **The brain's goal is survival**

- Functions more effectively in safe yet challenging environment

2. **Emotion is powerfully connected to thinking**
   - Emotions must be a part of the teaching and learning process
   - More likely to retain material in long term memory
   - Success encourages emotional involvement

3. **The brain needs to make connections**
   - It is a pattern seeker
   - It seeks relationships
   - It needs to analyze

4. **The brain is hard-wired for 'Experience Expected' situations**
   - There are experiences that need to take place during specific 'windows of opportunity', then there is a drop off
   - Required wide range of instructional approaches to prove a rich learning *experience*

5. **The brain is also wired for 'Experience Dependent' situations**
   - We learn better early in life than later, so front load learning
   - Use it or lose it

6. **The brain is holistic** – although some areas have specific responsibilities; the areas are interdependent
   - There is a need to teach to both sides of the brain, to the whole person

7. **The brain remembers what it considers important**

- Material needs to be meaningful, relevant and authentic

8. **Intelligence is mediated / enhanced by social situations**
   - There is a need to allow talk / cooperative learning

9. **The human brain uses 25% of available metabolic energy at rest.** It needs oxygen on demand – those who exercise increase the blood supply to the brain.
   - No couch potatoes

10. **Brains that life in enriched environments have around 40% more neuron connections than brains that live in bland environments**
    - Stimulating, challenging, and socially engaging environments affect students' neuron connections positively

11. **Dull boring environments cause the loss of dendritic connections. These environments are more damaging than enriched environments are at enhancing brain development**
    - Students need to be actively and meaningfully engaged in relevant tasks

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

Children at Risk

In Canada, approximately 1 in 5 students lives in an environment where they experience one or more of the following: physical abuse; sexual abuse; emotional abuse; neglect; drugs and alcohol; witnessing violence; living in poverty, a single parent on welfare, in subsidized housing; divorce (and at times, multiple divorce).

Key Ideas for Schools:

❑ Content must be integrated, meaningful and interesting

❑ School staffs must be sensitive to students' natural desire to learn rather than for the sake of covering content or assessing in ways that are not in the best interests of kids

❑ School staffs must act on the knowledge of cultural and individual differences

Key Ideas for Teachers:

❑ Work at creating successes and a respect for failure – both are useful

❑ Design meaningful, realistic challenges

❑ Structure opportunities for experiential and social learning

❑ Care

Key Needs of Students

❑ To engage their brains with useful and meaningful experiences

❑ To master their social, physical and emotional worlds

❑ To develop a 'competence motivation' based on their natural inclination to learn

The goal is powerful, meaningful, safe classrooms.

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser

Gender

Women's Ways of Knowing: (Levels in Learning Perspective)

1. *Silence:*   a position in which the learner finds herself as mindless and voiceless and subject to the whims of external authority

1. *Received Knowledge:* a perspective from which women conceive of themselves as capable of receiving, even reproducing knowledge from the all knowing external authority but not capable of creating knowledge on their own

2. *Subjective Knowledge:* a perspective from which truth and knowledge are conceived as of a personal, private, and subjectively know or intuited

3. *Procedural Knowledge:* a position in which women are invested in learning and applying objective procedures for obtaining and communicating knowledge

4. *Constructed Knowledge:* a position in which women are invested in learning and applying objective procedure for obtaining and communicating knowledge as contextual; they experience themselves as creators of knowledge.

The creation of autonomous learners here through cooperative learning is essential.

Boys and Literacy

1. Boys are more likely to participate and achieve in school literacy work if they don't see participation and achievement in such work as being in conflict with desirable constructions of masculinity.

2. They need to see how such work is relevant and useful:
   - In understanding their lives
   - In making their lives richer and fuller
   - And in offering them new and different ways of remaking their lives

3. Successful literacy classrooms provide such understandings and opportunities for all students.

4. Successful literacy classrooms also distribute power more evenly between the teacher and students, allowing students to be recognized and valued and their knowledge and skills enfranchised and respected. This is important for all students, but may be critical for boys. (Cooperative learning does this).

Adapted from *Beyond Monet The Artful Science of Instructional Intelligence*, Barrie Bennett / Carol Rolheiser