

# BRAINSTORMING

(20 min)

- A technique used during a meeting in order to encourage spontaneous contribution with ideas by all the team members
- Used in order to help a group to generate a list of ideas, on a specified subject, in a very short time
- The method encourages people to get away from obsolete solutions or mentalities

# BRAINSTORMING

- Encourage all ideas. The more, the better.
- It takes between 5 and 15 minutes.
- Avoid ambiguity in stating / writing the ideas
- Encourage concision: between 3 and 7 words

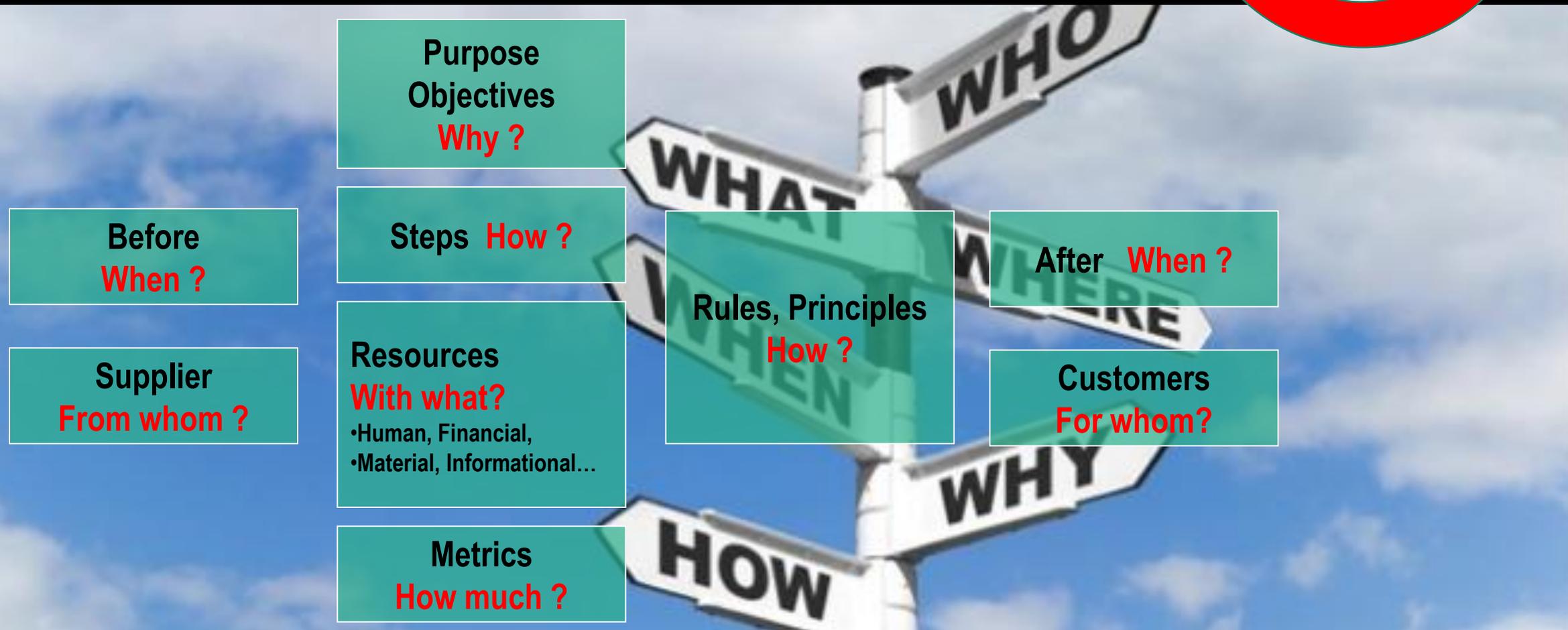
# BRAINSTORMING – THE TEAM

- The Facilitator:
  - Gathers the team
  - Understands the subject
  - Organizes the ideas as they pop-up
- The Participants:
  - In a sufficiently large number (4...15), excluding the Facilitator and the Writer
  - The Participants must be chosen to understand the subject, to be able to contribute
- The Writer: he notes the ideas; he does not contribute with ideas

# BRAINSTORMING - RULES

- The ideas are written on the flip-chart
- They are written using the speaker's words with minor rephrasing for clarity, without re-interpreting them
- The ideas are written even if incomplete or simply wrong
- By writing exactly what was said, we indirectly deliver the message that the participants' contribution is appreciated: this generates positive group dynamics and stimulates idea generation.
- **No idea is criticized or commented by the participants.**

# The facilitator:



# Affinity Diagram (AD)

(13 min)

- Helps the team to organize its ideas or problems into categories of interrelated items and establish a label for each.
- The method is also known as KJ – its designer – Jiro Kawakita
- **Recommended usage: Use [Affinity Diagram](#):**
  - To organize and group the information referring to a large-complex matter
  - To encourage collective and creative thinking processes of a team when innovation is necessary
  - When the solution needs support from all the participants.
- **The method**
  - Generate the ideas (for example via Brainstorming) and then the cards for Affinity Diagram
  - Arrange the Cards into Categories
  - Assign Title-Cards
  - Finalize AD.
- **Example given** 24/24 service problems classification

# Affinity Diagram: Generating ideas and cards for AD

- **Brainstorming** - Before building an AD, use Brainstorming in order to: :
  - Gather the team,
  - State the subject to be brainstormed and AD-ed
  - Generate the list of ideas
- **Creating the Cards in order to classify**
  - Transcribe the ideas obtained via Brainstorming on cards or post-its
  - The team will use these cards / post-its later in the classification process.

# Affinity Diagram: Arranging the cards into categories

- **Displaying the cards**

- Display the cards randomly on a big table
- The table should be large enough for all the participants to be able to see and place the cards
- Could be useful to cover the table with flip-chart pages before starting
- The post-its stuck on the paper will allow later the “portability” of the diagram, once the groups have been established.

- **Grouping the Cards**

- All the group members must participate in arranging the cards
- The cards are to be placed in groups organized into columns
- When you find two cards expressing similar ideas, place them in the same column
- Find other related cards with the first two ones or related cards that form a group of their own
- Continue the classification process until all the cards were placed into 6 to maximum 10 columns

- **When the cards don't fit into any group** It's possible for some cards to be part of a category of their own.

- Don't force “including” them into an existing category
- Solitary cards could generate categories of their own later or there may exist categories with a single card member.

- **Respect the Rules**

- The team members don't speak to each other during the classification process
- Silence seems to encourage the non-conventional thinking and helps avoiding contradictory discussions.
- If somebody does not agree with one card's classification, should copy the card and place it's copy in a second category.
- Speed in establishing categories is a key factor (first choice seems to be the best). Team members must be encouraged to act fast instead of reflecting too much on the classification.

# Affinity Diagram: Crearea Cardurilor-Titlu

- **Use an existing idea for the Title Cards**

- Identify a card in each category that describes best the category
- Place this card above the column of that category
- Align the other cards beneath the Title Card, in a column

- **If not possible, Create a Title Card**

- In some cases, it's difficult to identify cards that become category representatives (as above)
- Create a Title Card and place it above the category's column,
- The Title Card must be concise (3-5 words max)
- Avoid jargon and familiar/clichee expressions – be specific and clear. For example: “what the customer wants” is better than “Give them what they want”

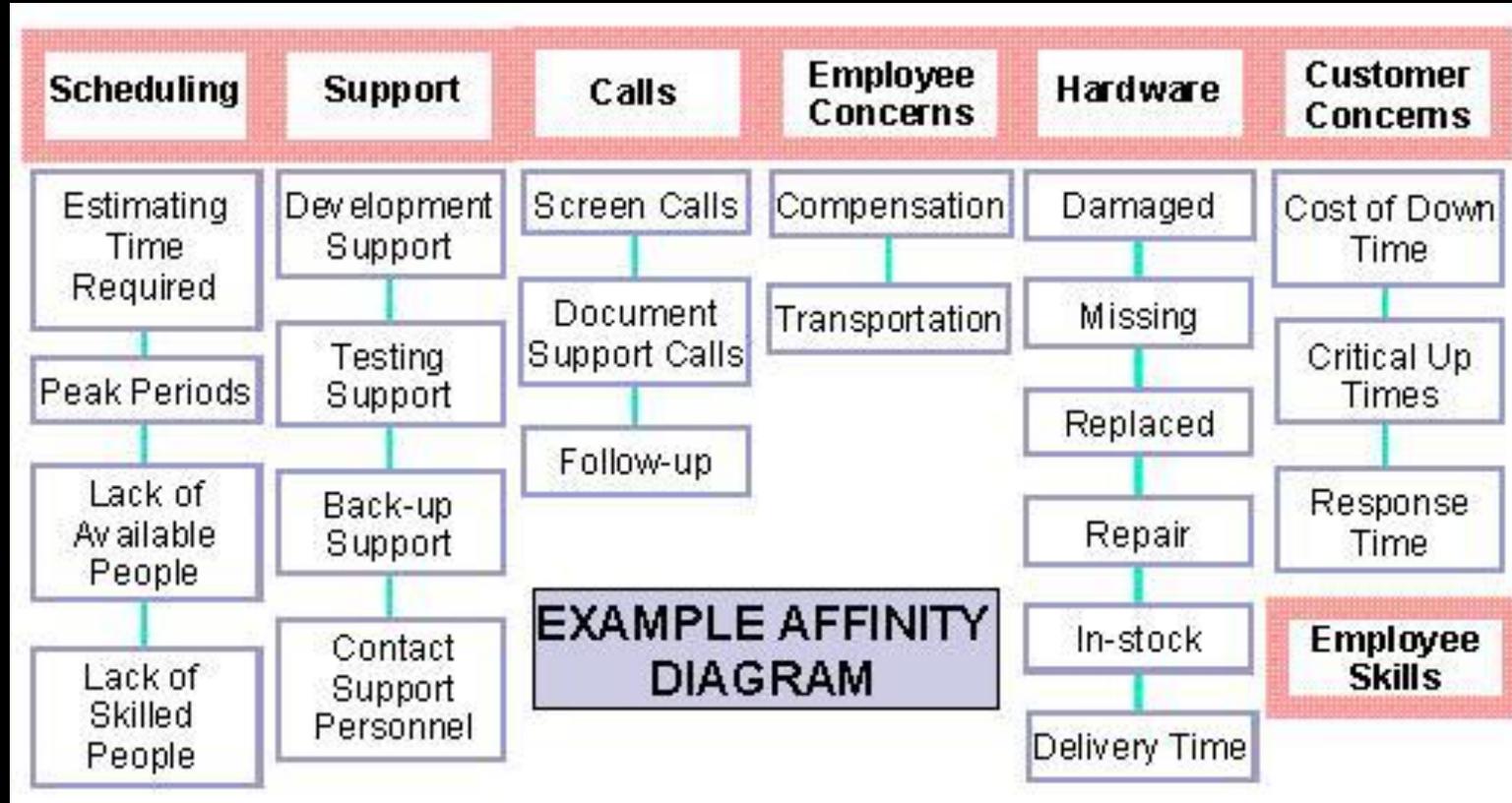
- **Test the Title Card**

- The Title Card must be representative for its category (the common idea of the category)
- For example, “Factors that affect the system's response time” is much better than simply saying “Performance”.
- As a last test, imagine that you are left just with the Title Cards. Would these be sufficient to describe the ideas for a person that did not take part in the process?

# Affinity Diagram: Completing the Affinity Diagram

- **Mark the Category Tree**
  - Place related category columns next to each-other
  - Mark the categories' border with a marker, including the Title-Card
  - Connect the categories with lines
- **Re-grouping Two Related Categories**
  - If two categories could be merged into a single one due to their similarity, create a new Title-Card to reflect the new category content
  - Place the new Title-Card above the two initial Title-Cards belonging to the similar categories
  - Frame with a marker the two categories.
- **As a last remark**
  - Building an AD is an iterative process. Continue to change the diagram until the entire team agrees that the diagram reflects properly the situation / group's understanding.

# Affinity Diagram: Example



# Workshop 1 (10 min)

- Maximum 6 participants
- 3 workshop groups
- The group could establish a facilitator or not
- Critically review and rephrase the questions if needed
- Validate through negotiation the fact that the ideas belong to the category
- Remove redundancies without losing ideas
- Add new questions
- Establish a logic and define an order to the questions
- *Write the resulted list of questions in a ppt file*

# AFFINITY DIAGRAM: Classifying STEM questions

(8 min)

1	Compare ... and ... with regard to...	17	What do you think causes ...? Why?
2	Describe ... in your own words.	18	What does ... mean?
3	Do you agree or disagree with this statement...?	19	What is ... analogous to?
4	What evidence is there to support your answer?	20	What is an argument for ...?
5	Explain how...	21	What is a new example of ...?
6	Explain why....	22	What is another way to look at ...?
7	How are ... and ... similar?	23	What is the best ... and why?
8	How could ...be used to ...?	24	What is the counter argument for...?
9	How does ... affect...?	25	What is the difference between ... and ...?
10	How does ... apply to everyday life?	26	What is the meaning of...?
11	How does ... tie in with what we learned before?	27	What is the nature of ...?
12	How does...apply to everyday life?	28	What is the solution to the problem of ...?
13	Summarize ... in your own words.	29	What is...analogous to?
14	What are the implications of...?	30	What would happen if ...?
15	What are the strengths and weaknesses of ...?	31	Why is ... happening?
16	What do we already know about...?	32	Why is ... important?

# Changing viewpoints (CVP)

- Category: Discussion
- Suggested duration: 30 minutes

- Intent:

Enables students to understand

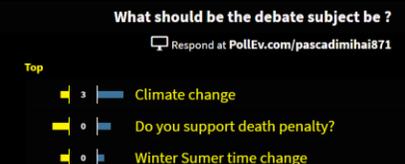
- different points of view on a problem and
- practice representing a position.

# Changing viewpoints (CVP) - STEPS

1. Select debatable issue
2. Pair and position students
3. Prepare debate individually (Research+arguments development)
4. Group students by common position and prepare jointly the presentations
5. Pair opposite groups of students to debate and debate
6. Switch positions and debate
7. Identify and agree on strong reasons for each point of view.
8. Develop a synthesis report reflecting all positions + reasons; state the agreed position and reasons for choosing it
9. What went well? What could be improved next time?

# Changing viewpoints (CVP) - MODIFIED

1. Select debatable issue
2. Pair and position students (1,2,1,2,...)
3. Prepare debate individually (Research+arguments development)
4. Group students by common position and prepare jointly the presentations
5. **Nominate a representative and debate between the representatives:**
  1. initial position statement,
  2. break for consulting,
  3. counter argue
6. Switch positions and debate
7. Identify and agree as one group on strong reasons for each point of view.
8. Change positions and
  1. **develop a synthesis report reflecting the opposite position** + reasons (team 1) in a ppt file;
  2. state the agreed position and reasons for choosing it (team 2) in a ppt file
9. Both teams: create a new site page **"1. Changing viewpoints"** and upload the ppt files



# Analysis for decision

- Category: Critical Thinking
- Suggested duration: N/A
- Intent:

Students write a one- or two-page analysis of a specific problem or issue to help inform a decision-maker.

# Analysis for decision

1. Select analytic method(s) to assess
2. Provide an assignment sheet document describing the matter to be assessed + research indications
  1. Student role in writing the memo
  2. Identity of the audience
  3. Specific subject to be addressed
  4. The analytic approach to be used
  5. The required volume (usually 1-2 pages)
  6. The assignment deadline

# Analysis for decision – design exercise

1. 4 teams
2. Propose and describe one analysis subject:
  1. Select analytic method(s) to assess
  2. Provide an assignment sheet document describing the matter to be assessed + research indications
    1. Student role in writing the memo
    2. Identity of the audience
    3. Specific subject to be addressed
    4. The analytic approach to be used
    5. The required volume (usually 1-2 pages)
    6. The assignment deadline
    7. Insert the assignment sheet document in a \*.ppt file
    8. Create a site page “Analysis for decision” and up-load the file

Johnson and Johnson, 1994

# Article Abstract

- Category: Critical Thinking
- Suggested duration: N/A

- Intent:

Provides active strategy for students to read and analyze articles in the discipline.

# Article Abstract

1. Instructor selects an important article from the discipline being studied.
2. Students write a summary or abstract of the article.

# Article Abstract – Workshop 4 teams

What makes a good abstract ?

Re-group 4 representatives in a workshop (5 minutes) to formulate a final criteria list

Create a \*.ppt file with the agreed criteria and up-load-it to a dedicated page “Article abstract” into one of the 4 sites

# Categorizing Items

- Category: Critical Thinking
- Suggested duration: N/A

- Intent:

To have students practice placing items into specific categories.

# Categorizing items

1. Select 2 or 3 similar categories
2. List several examples that fit into only one category.
3. Have students assign the examples to categories and build a tree of categories
4. Students explain their reasoning, either in small or large groups.

# Categorizing items - Exercise

- |              |                |                  |               |               |
|--------------|----------------|------------------|---------------|---------------|
| 1. cat       | 13. snake      | 24. ant          | 35. rat       | 46. alligator |
| 2. goat      | 14. lion       | 25. camel        | 36. goldfish  | 47. duck      |
| 3. penguin   | 15. kangaroo   | 26. chicken      | 37. seal      | 48. rabbit    |
| 4. giraffe   | 16. fox        | 27. hamster      | 38. dog       | 49. snail     |
| 5. wolf      | 17. sheep      | 28. panda        | 39. frog      | 50. turtle    |
| 6. cheetah   | 18. lobster    | 29. fish         | 40. butterfly | 51. fly       |
| 7. scorpion  | 19. chimpanzee | 30. bird         | 41. puppy     | 52. monkey    |
| 8. eagle     | 20. bee        | 31. cow          | 42. crocodile | 53. zebra     |
| 9. dolphin   | 21. horse      | 32. hen          | 43. antelope  | 54. pig       |
| 10. elephant | 22. octopus    | 33. kitten       | 44. owl       | 55. deer      |
| 11. bear     | 23. spider     | 34. hippopotamus | 45. tiger     | 56. squirrel  |

# Categorizing items – Exercise - 1

1. Write the names on post-its
2. Apply level 1 Affinity Diagram and form a number of groups
3. **Name** each group with a relevant name
  1. Take **each** group on a separate flipchart sheet and assign people to each group
  2. Apply level 2 Affinity Diagram and form a number of sub-groups
  3. **Name** each sub-group with a relevant name
    1. Take **each** sub-group on a separate area and assign people to each group
    2. Apply level 3 Affinity Diagram and form a number of sub-sub-groups
    3. **Name** each sub-sub-group with a relevant name
      1. ... continue till classification is finalized
4. Finally, associate to each name the specific criterion it represents

# Mind Mapping

- Category: Problem-based Learning, Critical Thinking
- Suggested duration: 10-20 minutes

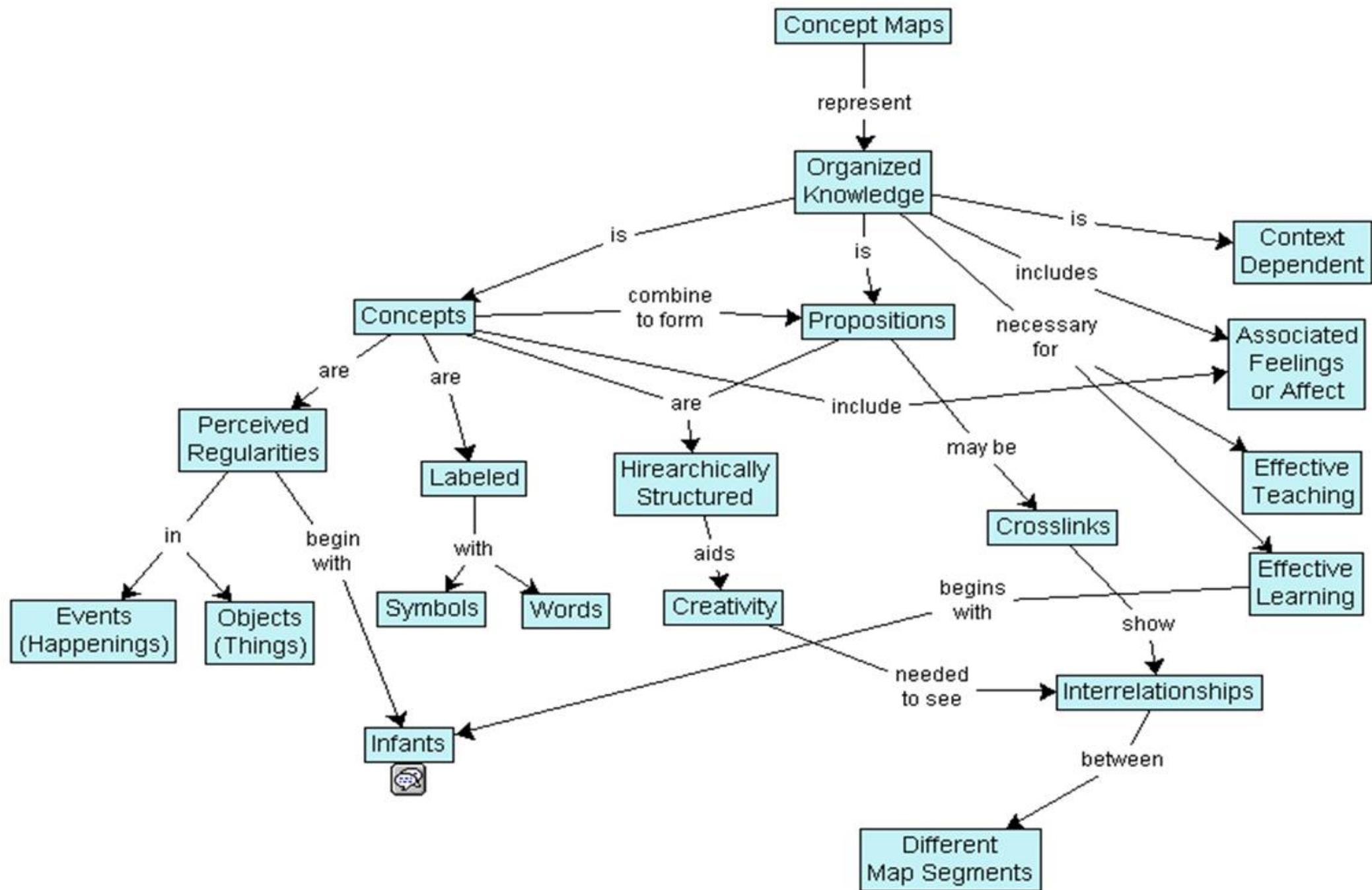
- Intent:

To have students identify a main concept and relating concepts about a particular topic in a visual manner.

A concept map is a diagram showing the relationships among concepts. They are graphical tools for organizing and representing knowledge.

Concepts, usually represented as boxes or circles, are connected with labeled arrows in a downward-branching hierarchical structure. The relationship between concepts can be articulated in linking phrases such as "gives rise to", "results in", "is required by," or "contributes to".

The technique for visualizing these relationships among different concepts is called "Concept mapping".



# Mind Mapping

On a white board or posted flip chart paper

1. Identify a main concept
2. Have students identify concepts that are related to the main concept.
3. Students should draw a line between related concepts and write the verb that relates the concepts on the connecting line.
4. Repeat this process connecting new concepts to the related concepts and so on.
5. An alternative approach is to have students prepare a list of concepts on sticky notes and organize the combined group of notes into a map of related concepts.

[http://en.wikipedia.org/wiki/Concept\\_map](http://en.wikipedia.org/wiki/Concept_map)

# Mind Mapping- Exercise

1. Form 4 teams
2. The **central concepts** are earth, water, air, fire
3. Each team member adds 2 concepts related to the central concept and specifies the relationship verb+details (2 minutes)
4. Teams rotate
5. Each team member adds 2 concepts related to any other concept on the map and specifies the relationship

... repeat steps 4 and 5 until teams reach again in their original position

Each team presents its results

**Take a photo of the flip-chart, send it via e-mail to a participant that can edit the site; create a new page “Mind Mapping” and up-load the photo**

[http://en.wikipedia.org/wiki/Concept\\_map](http://en.wikipedia.org/wiki/Concept_map)

# Concept Review

- Category: Check for Understanding, Reflection / Debriefing
- Suggested duration: 5-20 minutes

- Intent:

To allow students a chance to review concepts you have covered in a previous lesson or session.

# Concept Review

1. Ask students to identify an example for each of the concepts/theories/topics covered in the lesson or questions they might have
2. Direct students to form pairs (or small groups) and review their answers with a partner and come to consensus on at least one correct answer for each question.
3. Ask students to share their answers with the entire class.

# Concept Review - Exercise

1. Count 1,1,1,1,2,2,2,2,3,3,3,3,4,4,4,4 ...
2. Provide individually definitions for the concepts
3. Group 1 with 1, 2 with 2, etc., compare and agree in teams the definitions; **create a \*.ppt file with the definitions and up-load it on a new page called "Concept Review"**.
4. Present the pages

- a) Provide a definition for "profit"
- b) Provide a definition for "resource"
- c) Provide a definition for "scarcity"
- d) Provide a definition for "specialization"

- a) Provide a definition for "equilibrium price"
- b) Provide a definition for "effectiveness"
- c) Provide a definition for "efficiency"
- d) Provide a definition for "monopoly"

- a) Provide a definition for "capitalism"
- b) Provide a definition for "socialism"
- c) Provide a definition for "cartel"
- d) Provide a definition for "company"

- a) Provide a definition for "oligopoly"
- b) Provide a definition for "wage"
- c) Provide a definition for "shareholders"
- d) Provide a definition for "stakeholders"

# Data Analysis

- Category: Check for Understanding, Classroom Assessment Technique
- Suggested duration: 10-20 minutes

- Intent:

Allow students to practice analyzing data and presentation skills.

# Data Analysis

1. Instructor provides students with raw data such as lists, graphs, or tables.
2. Students prepare an analysis of the data to present to class.

# Data Analysis- Exercise

Draw the following process flow in Simple BPM:

1. An RFP has been received,

2. Perform initial RFP analysis to decide GO-NOGO,

then either

2.1 If: GO

2.1.1 Develop the Technical Offer, then

2.1.2 In parallel:

2.1.2.1 Develop the Financial Offer and

2.1.2.2 Obtain / issue the Bid Qualification Documents

then

2.1.3 Check and approve the offer

Go to 3.

or

2.2 If NOGO

2.2.1 Write the non-participation response letter

3. Mail the resulted documents to the customer

4. STOP

# Data Analysis- Exercise

- 4 teams
  - Copy the Synthetic Table to Excel
  - Perform an analysis of the process duration by making hypotheses regarding each activities minimum and maximum durations as well for the probability of the GO-NOGO decision alternative.
  - Create a new page on the website "**Data Analysis**" and up-load the analysis there.
- 
- Result [example](#)

# Features Based Comparison

- Category: Classroom Assessment Technique
- Suggested duration: 10-30 minutes

- Intent:

Assists students practice identifying what the significant features are of similar concepts.

# Features Based Comparison

1. Identify two concepts that have several similarities. Students can readily confuse the characteristics of key features or concepts that exhibit some similarities (e.g., hurricanes vs. tornadoes, Lincoln vs. Douglas, Picasso vs. Matisse).
2. List the important characteristics of the two concepts . These may include characteristics that are similar in both cases or different (or even absent in both cases).
3. Generate a matrix. The simplest matrix has two open columns on the right side that can be used by students to place a + (feature is present) or – (feature is absent) and a wider left-hand column with remarks/explanations

Angelo and Cross, 1993

Also: [http://www.uakron.edu/centers/cci/docs/CAT\\_defmatrix.pdf](http://www.uakron.edu/centers/cci/docs/CAT_defmatrix.pdf)

# Features Based Comparison - Example

*Example:*

## Metamorphic Rocks Defining Features Matrix

Complete the table below by placing a check mark in the one or both of the two columns of the table where appropriate. Identify which of the characteristics in the left hand column are present in rocks formed by contact and/or regional metamorphism. **Do not** place a check mark in either column if the characteristic is not present. One characteristic has been completed as an example.

Characteristic	Rocks	
	contact metamorphism	regional metamorphism
Formed at temperatures above 200 C	+	+
May originally have been an igneous rock	+	+
Form as a result of increasing pressures	-	+
May surround plutonic igneous rocks	+	-
Slate is an example	-	+
Formed as a result of melting	-	-

# Features Based Comparison - Exercise

- 4 teams
- Propose a Features Based Comparison Exercise
- Run the exercise
- Document the exercise in a ppt file, create a new page on the website “Features Based Comparison” and upload the file
- Present the results

# Directed Paraphrasing

- Category: Check for Understanding, Classroom Assessment Technique
- Suggested duration: 5-20 minutes

- Intent:

A quick way for the instructor to identify where the students are at in their understanding of a concept or idea.

# Directed Paraphrasing

1. Ask students to define what a particular concept means to them in 1 or 2 concise sentences. The definition should make sense to other students and the instructor. Another variation of this approach is to have students list as many words as they can think of related to a concept or idea.
2. The instructor engages students in quickly sorting responses into three categories: “okay,” “not quite,” “no idea.”
3. Based on this feedback, the instructor can begin to tailor class presentations and activities to address student knowledge gaps or difficulties.

Angelo and Cross, 1993

Similar to Background Knowledge Probe.

# Directed Paraphrasing - Exercise

1. 4 teams
2. Choose a subject
3. Design 5 DP questions
4. Document the DP questions in a ppt file, create a new page called “Directed Paraphrasing” and up-load the file

# Double Entry Journal

- Category: Journaling, Reflection / Debriefing

- Suggested duration: N/A

- Intent:

This can be used for lectures, article reviews, videos, and other times when students are typically passive to make students more active and reflective.

This is a great way to have students take notes, and reflect on their thinking and learning process.

# Double Entry Journal

1. Have students first create an outline of the critical points and ideas of the presentation in one column.
2. Have the students write a response to each point in the second column that addresses their reactions, feelings, and questions.

# Double Entry Journal - Example

Critical Points / Ideas / Concepts	Response (reactions, feelings, questions, etc.)

# Double Entry Journal – Exercise design

1. 4 teams
2. Choose a topic
3. Choose a max 5 minutes video on the topic
4. Debate on the critical points in the video and write them down
5. Debate on the possible content of the second column (Response)
6. Document the work in a ppt file > topic, video link, table content, create a page in the website “Double Entry Journal” and upload the file.
7. Present the results

# 11. Failure Analysis

- Category: Critical Thinking, Problem-based Learning
- Suggested duration: 30-90 minutes (more if assigned as a group project outside of class)

- Intent:

To have students work through a problem backwards, identifying why a solution or problem failed and determine solutions that will work.

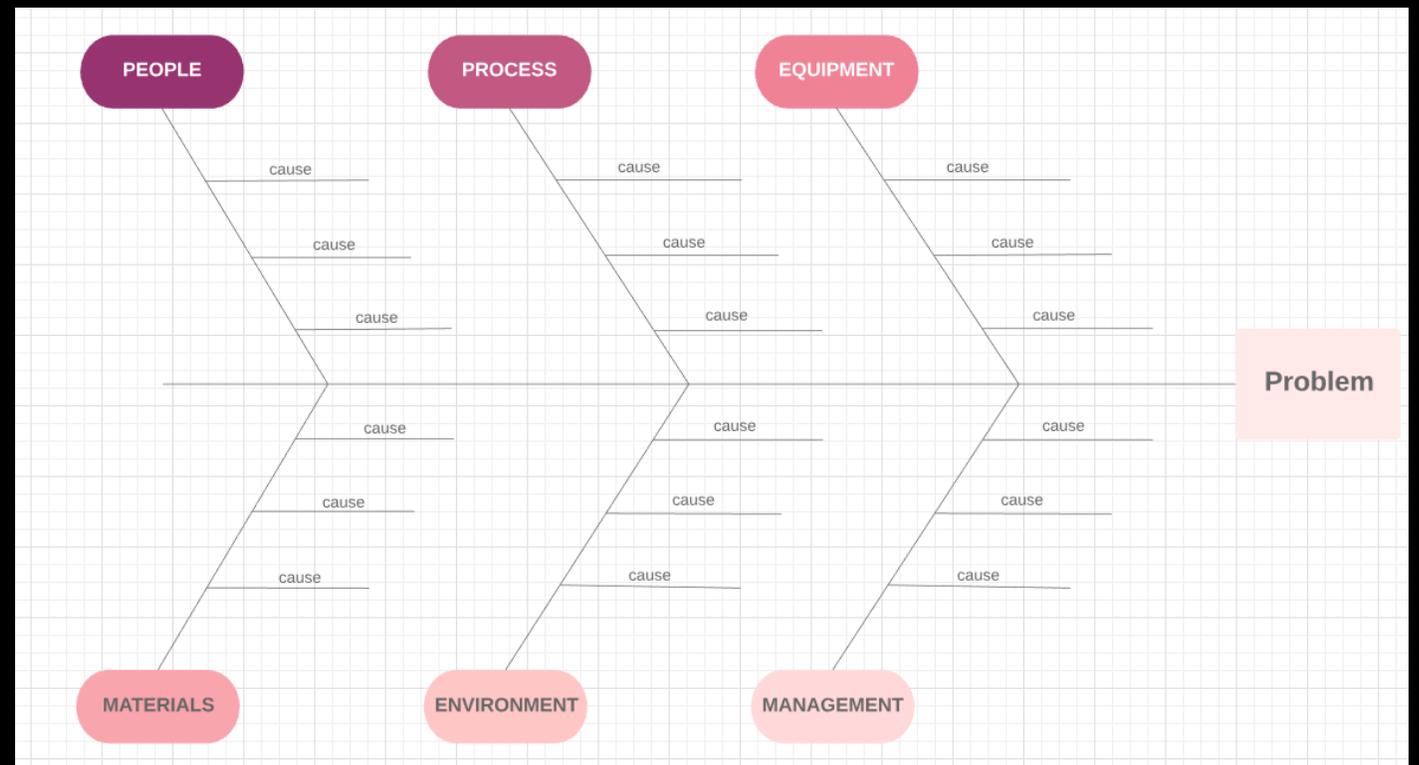
# 11. Failure Analysis

1. Provide students with a case study or scenario that presents the topic with an analysis of how it failed.
2. Have students research the scenario or case study.
3. Direct students to start from the failure and analyze the situation or scenario from the failure to identify the main causes of the failure.
4. Ask students to write a paper or make a presentation about why the scenario or case study failed and how it could have been avoided.

Can use the What? So What? Now What? To guide the analysis

# 11. Failure Analysis – Design an Example

1. <https://www.lucidchart.com>



<https://www.youtube.com/watch?v=y1kPAWVI5UA>

# 11. Failure Analysis – Design an Example

1. Split into 3 teams
2. Research and choose a case on the net (suggestion – The FlightChannel) but any other case may be chosen
3. Compose the directing questions for the students in order for them to be able to successfully perform the failure analysis
4. Sketch for the chosen example the Ishikawa diagram (fishbone)
5. Document in a ppt file the link to the chosen case, the directing questions and the result of the analysis, up-load the file on a new dedicated page “Failure analysis”
6. Present the results

# 12. Focused Free Writing

- Category: Journaling, Reflection / Debriefing, Check for Understanding

- Suggested duration: 5-20 minutes

- Intent:

Can be used if students either have nothing to say or everyone wants to talk. Can also be used to summarize lecture and or reading by having students summarize main points of lecture, what they have learned, what does not make sense to them, the “muddiest point,” or what questions they have.

## 12. Focused Free Writing

1. Instructor assigns a general topic to write on.
2. Students write nonstop for a period of time (such as 15 minutes).  
Don't worry about revision, punctuation, spelling, grammar, etc.
3. students turn in writing at the end of the session

Fifteen minutes should yield a page, but it could be longer.

## 12. Focused Free Writing - Example

1. Propose themes for the Focused Free Writing technique
2. Imagine a set of evaluation criteria for the proposed focused free writing theme
3. Document the theme and the criteria in a \*.ppt file, up-load the file in a new page called “Focused Free Writing”

# 13. Frame Sentence

- Category: Journaling, Check for Understanding

- Suggested duration: 5-15 minutes

- Intent:

Provides focus and starting point for student writing and analysis.

# 13. Frame Sentence

1. Instructor provides students with an opening frame sentence for the start of a new paragraph or short essay.
2. Students complete the paragraph or essay with supporting details and/or generalizations.
3. Read a relevant number of short essays.

# 13. Frame Sentence - Example

1. In my opinion, among the two world wars, the most important global impact was determined by world war ...

- 4 teams: propose 2 themes by team and 2 frame sentences.
- Document them in a ppt file and up-load the file on a new site page called "Frame Sentence"

# 14. Futuring

- Category: Check for Understanding, Critical Thinking, Problem-based Learning

- 30-90 minutes (more if used as an out of class activity as well)

- Intent:

Allows students to forecast possible future scenarios based on existing conditions.

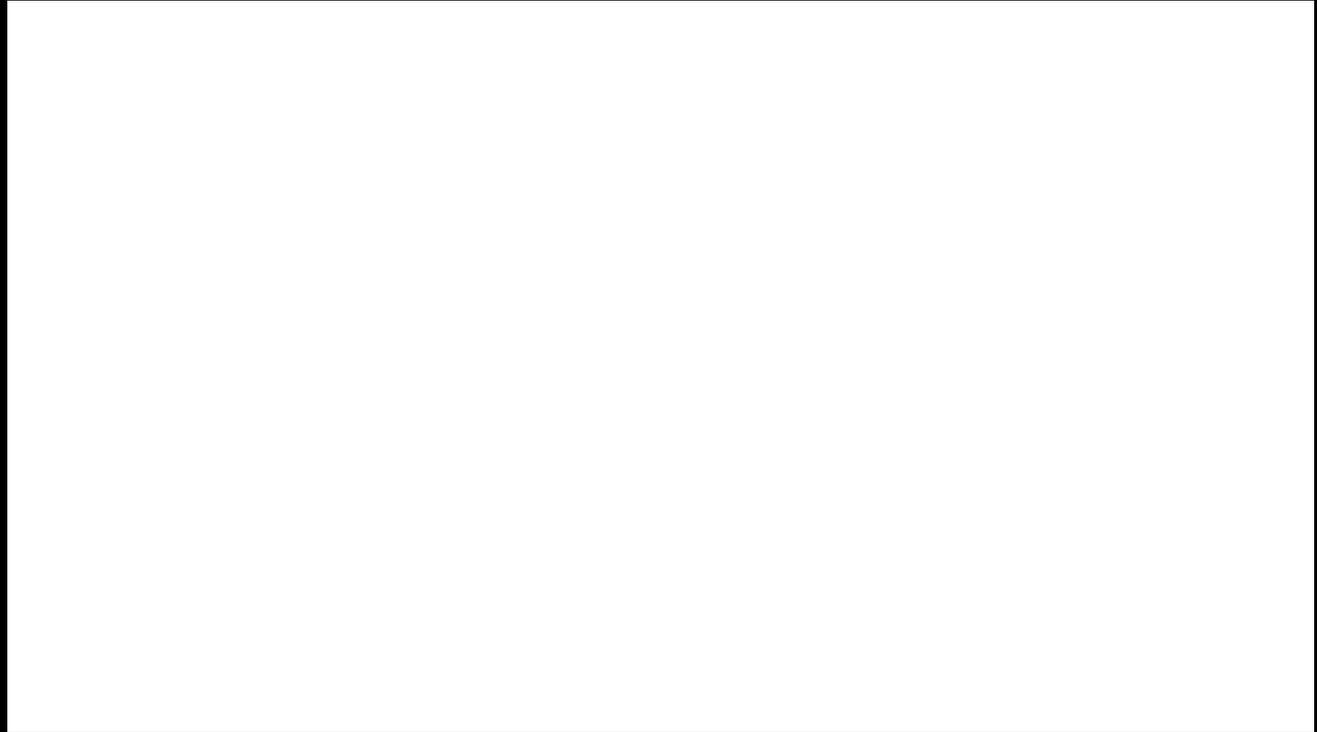
Can be done individually, in groups, or as whole class. Can also combine with Concept Map.

# 14. Futuring

1. Instructor selects a current condition or trend and asks the students to consider the following questions:
  1. What are the underlying causes that created this trend?
  2. How likely is it that those causes will stay the same, increase, or decrease in the future?
  3. What new developments might alter the trend?
  4. If this trend changes, intensifies, or decreases, what impacts will it have?
2. Students use their answers to these questions to develop scenarios of what the future will look like in a specified time frame.

# 14. Futuring - Exercise

1. <https://www.youtube.com/watch?v=TPbKyD2bAR4>
2. Watch the video
3. Propose a Futuring exercise based on this video
4. Document the proposed exercise in a ppt file and upload the file in a new site page called "Futuring"



# 15. Guided-Discovery Learning / Student Research

- Critical Thinking, Problem-based Learning
- 30-90 minutes (more if used as an out of class activity as well)

- Intent:

Makes the students responsible for discovering course content rather than an instructor presentation.

# 15. Guided-Discovery Learning / Student Research

1. The instructor identifies key resources, background information, and most importantly, provides a set of “guided” critical thinking questions to the student. These questions are written with an understanding of what critical thinking is needed to process the information and construct knowledge.
2. Critical thinking questions are provided in a certain sequence, starting with directed questions, followed by questions with a specific answer, with questions that can have multiple answers last. These questions provide assistance in guiding students’ thought processes toward the production of knowledge at the appropriate level of attainment.
3. Students do their own research (individually or in a group) to locate the information rather than have the instructor pre-select a reading or a lecture.
4. Students may be required to present to the rest of the class their findings.

The Generic Question Stems can be used as a starting point for generating questions for this activity.

# 15. Guided-Discovery Learning / Student Research - Example

1. Choose a guided-discovery theme
2. Sketch the desired learning path
3. Design the guiding questions list
4. Present the theme, the guiding questions list and explain how they will lead to the desired learning path
5. Document the exercise in a ppt file, up-load the file in a new page called "Guided Discovery"

# 16. Index Card Match

- Classroom Assessment Technique, Check for Understanding
- 10-30 minutes
- Intent:  
To review course concepts or to prepare for an exam

# 16. Index Card Match

1. Create index cards containing concepts, theories, terminology, etc. and then on a matching card, write the definition of that item
2. Combine the two sets of cards and shuffle thoroughly
3. Have the students draw a single card and explain that some students have definitions and others have the theories, concepts, etc. that match the definition cards
4. Direct the students to find their match and then sit together without identifying to others what item they have
5. Have the students quiz the rest of the group on the topic by reading aloud the definition or giving an example of the item.

You can develop cards that are missing one word out of a sentence while the corresponding card contains the missing word.

You can also create an example card with multiple solutions and have the students form groups instead of pairs (i.e. “What is an example of a way to give good customer service?”) and when they quiz the group, they can obtain multiple answers to the question.

# 16. Index Card Match - Exercise

1. Split into 4 teams
2. Choose a domain
3. Choose the concepts, theories, terminology (5 cards=post-its)
4. Design the definition cards for the concepts, theories, terminology (5 cards = post-its)
5. Document the pairs in a \*ppt file and up-load the file in a new page "Card Match" in the site
6. Present the results

# 17. Jigsaw

- Shared roles Learning
- 30-90 minutes (more if used as an out of class activity as well)

- Intent:

Allows students to either teach each other new content or review content.

[https://www.educationworld.com/a\\_curr/curr324.shtml](https://www.educationworld.com/a_curr/curr324.shtml)

# 17. Jigsaw

1. Divide students into groups and assign each group a portion of the content to be reviewed/presented.
2. The groups review the material and plan how to teach the material to the other groups (preparation sessions).
3. Create new groups with one member from each of the first groups (now called a teaching or presentation session).
4. In the second session, each group member presents the material they covered in the preparation groups.

You will probably want to give the preparation sessions groups some guidelines for what they need to teach in the presentation groups (i.e. identify the 3-5 most important topics from the chapter or the important points of a theory, etc).

You may also want to use color coded stickers given to each member of the preparation group to make the formation of the presentation session group easier.

Another variation on this activity is to reconvene the preparation groups to allow the students to share what they learned in their other groups.

# 17. Jigsaw – Build an example

1. Split into preparation sessions groups
2. Choose a topic to be prepared for teaching (max 5 min teaching duration)
3. Announce the topics to the other groups to avoid overlaps
4. Prepare the teaching
5. Document in 1 \*ppt slide the teaching theme and up-load it to the site
6. Change groups
7. A representative of each initial groups teaches the materials

# 18. Laboratory Notebook

- Reflection / Debriefing
- Ongoing as appropriate
- Intent:

Enables the students to reflect on what is occurring during an experiment or problem solving exercise.

# 18. Laboratory Notebook

1. In one column students record what they observed or experienced in a lab or demonstration situation.
2. In the second column, the student records their thinking and reflections. They address why they did something or what the results indicate to them.

Similar to Double Entry Journal. This approach could also be used with solving a math problem or other type of problem.

# 18. Laboratory Notebook - Prepare an Example

1. 4 teams
2. Choose a topic to be analyzed
3. Fill in the first column with the main points of the topic
4. Fill in the second column with possible reflections regarding the main points (thinking about the learning process)
5. Document the prepared example in a \*.ppt file and up-load it to the site
6. Present the results

# 19. Listening Teams

- Check for Understanding, Reflection / Debriefing
- 10-30 minutes after a short lecture, video, presentation
- Intent:

To help students stay focused and alert during lecture, video, presentation

# 19. Listening Teams

1. Assign students to one of four roles:
  1. Questioner – students who will ask at least 2 questions (and have prepared answers to them) about the lecture content after it is complete
  2. Team Player – students who will identify 2 areas of agreement with the lecture content and explain why
  3. Devil’s Advocate – students who will identify 2 areas of disagreement with the lecture content and explain why
  4. Example Giver – students who will give example or specific applications of the content
2. Give your prepared lecture, video, presentation
3. Group the roles together (all questioners, all team players, etc.) and give 10 minutes to formulate their responses to their assigned tasks
4. Break the students into groups containing one of each role and allow them time to discuss their questions, examples, etc.

You can also conduct this activity as a large group session, by reconvening the group after the teams have had time to formulate their responses and discussing each item as a large group.

# 19. Listening Teams - Example

1. Assign the 4 roles and group same roles into 4 groups
2. Search videos (max 5 minutes) and propose 1 by each team
3. Choose a video for the entire class
4. Play the video and act according to the role
5. Discuss within each group the created content (questions, areas of agreement / disagreement, examples) and adjust them
6. Document in a \*.ppt file the video url, the questions, areas of agreement, areas of disagreement, examples and up-load it to the site
7. Form teams with mixed roles
8. In the new teams, answer the questions, debate on agreement/disagreement areas, present the examples

# 20. Metacognition (Thinking About Thinking)

- Critical Thinking, Problem-based Learning
- Ongoing
- Intent:

To have students express and document their thinking and problem solving processes.

# 20. Metacognition (Thinking About Thinking)

1. Have students talk through and develop a description of how to go about solving a specific problem. One context for this is to tell the students that they need to teach this to someone else who knows even less than they do.
2. Provide students with a sample of how an expert would approach the problem or the commonly accepted way of going about solving this problem. (Don't tell the students that they were wrong, because in the end they may have reached the same destination. The focus is on the process.)
3. Have students discuss how and why their approach differed from the expert approach.
4. Have students identify how they would go about solving these types of problems in the future.

## 20. Metacognition (Thinking About Thinking) - Example

1. 4 teams
2. Choose a problem adequate to this group technique
3. Think about how should someone seek the solution (the thinking process)
4. Provide the expert solution to the problem
5. Document the proposed example in a \*.ppt file and upload it to the site
6. Present the problem , the thinking process and the expert solution