Critical Thinking (Facilitator's Guide)

This guide contains facilitator notes for the How to Think Critically slides.

Prior to your presentation, make sure that you have download links available for:

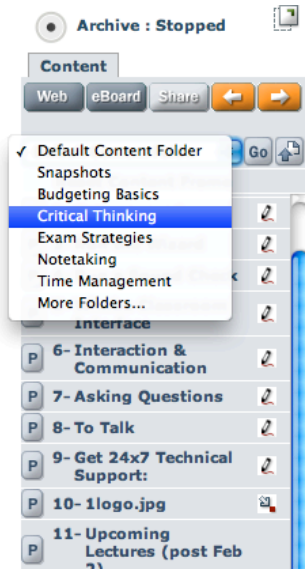
The Student Handout
A Free Online Mindmapping Web Service Such as www.text2mindmap.com
The Learning Commons Critical Thinking Study Toolkit Page
The Online Workshop Series Survey

This guide is organized slide-by-slide. Feel free to draw heavily on the text or just use it to guide you with respect to the slides presented.

Workshop Outline

Learning Outcome	Action	Purpose	Time
Pre-workshop	Push the handout and poll the students about their background.	Explain that the handout serves as a basis for taking notes during the presentation	5 min
Introduction	Introduce yourself and the topic	Gives a clear statement of the purpose of the workshop.	2 min
Outcomes	Outline the learning outcomes for the workshop	Provide students with a clear idea of what to expect in the workshop	2 min
Self-Analysis	Poll students about critical thinking strategies.	Identify and analyze group levels of critical thinking	4 min
What is Critical Thinking?	Define critical thinking and potential barriers	Give students a clear set of criteria for understanding critical thinking	7 min
Spectrum of Authority	Demonstrate how to analyze multiple authorities and their source in a debate	Shows students that every debate has multiple possible angles arising from different cultural and scientific authorities	5 min
Self-reflection	Ask students to identify something that has hindered them from critical thought in the past.	Demonstrates that critical thinking tools are necessary to overcome our own prejudices	4 min
Basic Tools	Introduce Force Field Analysis and Mind Mapping.	Provide detailed instructions on how to undertake Force Field Analysis and Mind Mapping. Examine when you would undertake them	6 min
Reflection	Ask students to discuss whether they would use these tools.	Allows students to focus on how they might use these tools.	2 min
Advanced Methods and Tools	Introduce CoRT and Six Hat Thinking	Provides students with an in-depth understanding of breaking a research problem into various thinking strategies in order to explore all avenues of thought.	15 min
Reflection	Ask students to discuss whether they would use these tools.	Allows students to focus on how they might use these tools.	2 min
Poll	Ask students to come up with two tools or ideas that they will take away from the workshop.	Allows students to reconsider what has been covered in the workshop and to prioritize what works for them	3 min
Exit	Show the students the Learning Commons Study Toolkit page	Provides further resources for students	2 min

Select the Critical Thinking Slides

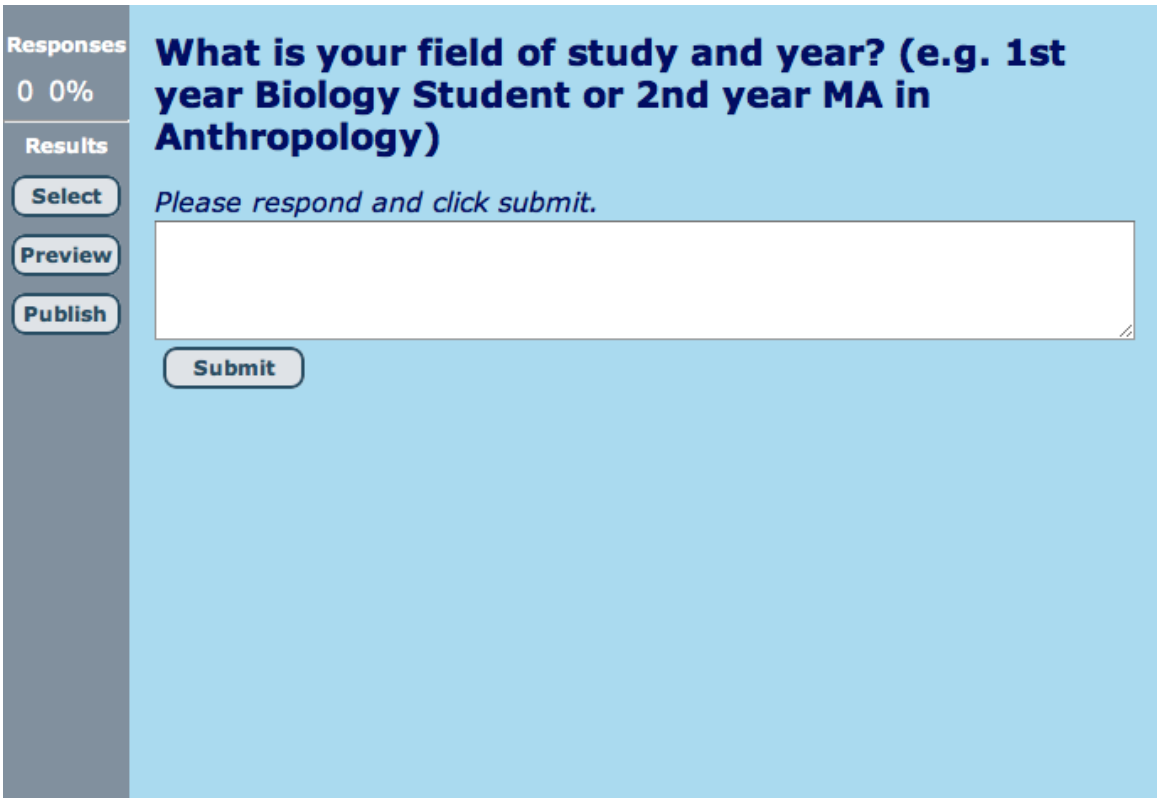


It is recommended that you log in to the Learning Commons classroom at least 15 minutes prior to the start of the workshop. When you first log in to the classroom, you will need to select the Critical Thinking Slides from the Content dropdown menu. Once you have selected them, click on Go.

Workshop Series Title Slide

Use this slide to greet the students. Push the handout to them as a download link. If students are having technical troubles, please try to troubleshoot them early on.

About You Slide



Encourage students to share a little bit of their background with you. This helps to personalize the encounter and may help you see the breadth of experience in your classroom. This step should be completed prior to commencing archiving.

This is a good time to explain that student names are not attached to the polls.

Introduce the Lecture

How to think Critically

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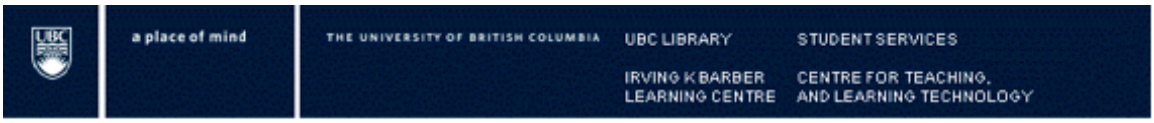
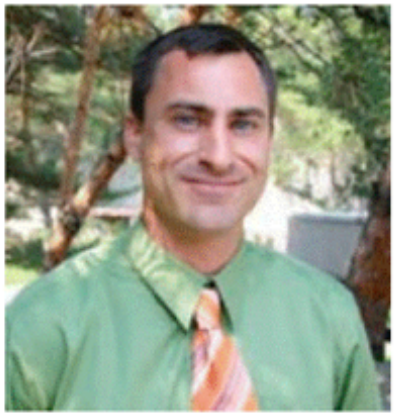
After you switch to the title slide, remind students that the presentation will be archived. After you click on the Archiving button, wait for the Archiving announcement to complete. You will also notice that there are now two new listings in the participants representing the archive and encoder. You can ignore these.

Introduce the workshop for the benefit of the archive record. Remember that this will be the first slide seen by later viewers.

Facilitator Slide





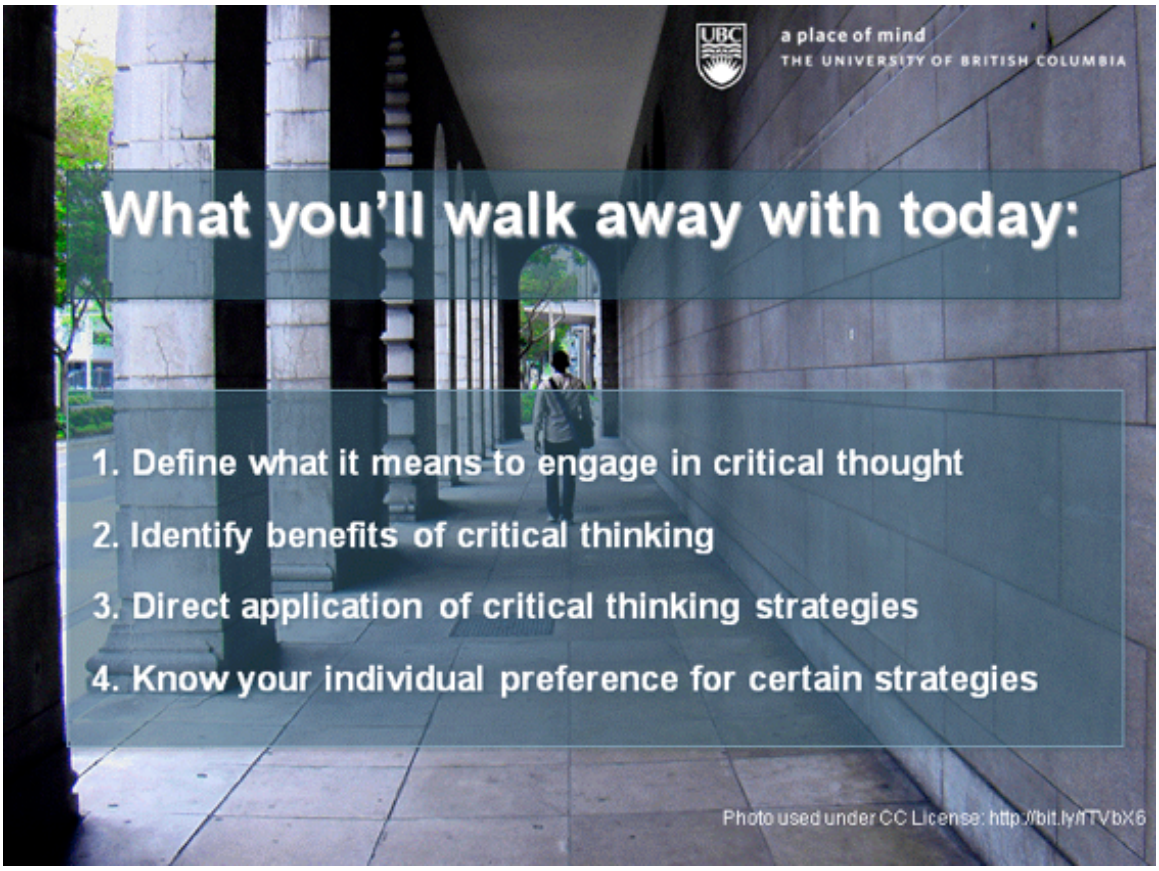
Jonathan Strang

PhD SUNY Buffalo
MLIS Candidate UBC

UBC Online Workshop Facilator

Introduce yourself as the facilitator for the presentation. If you have some special insight or background, make sure to share it with the class.

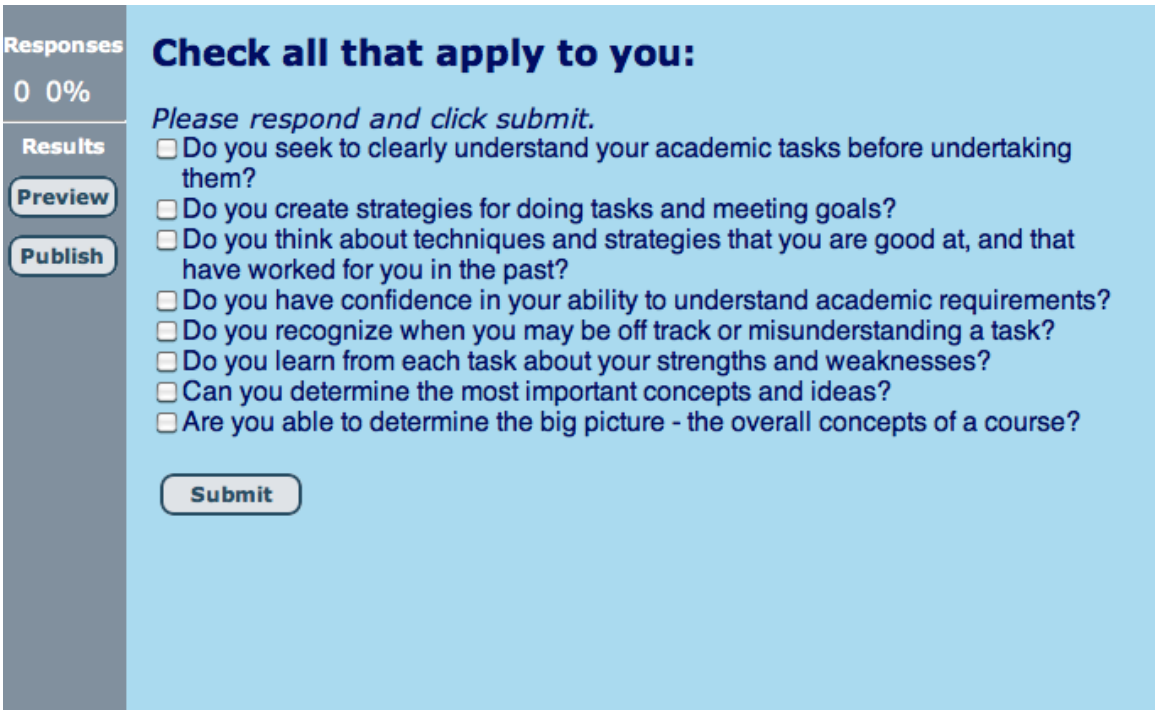
Outline Learning Outcomes



Identify the learning outcomes for the workshop. This workshop is designed to define critical thinking and outline the reasons why it is important. The second half of the workshop will outline specific tools and methods for critical thinking. Encourage students to consider their own personal learning preferences throughout the presentation.

This is a good opportunity to encourage participants to use the text chat to raise questions, seek clarification, or further discussion during the workshop.

Self-Reflection

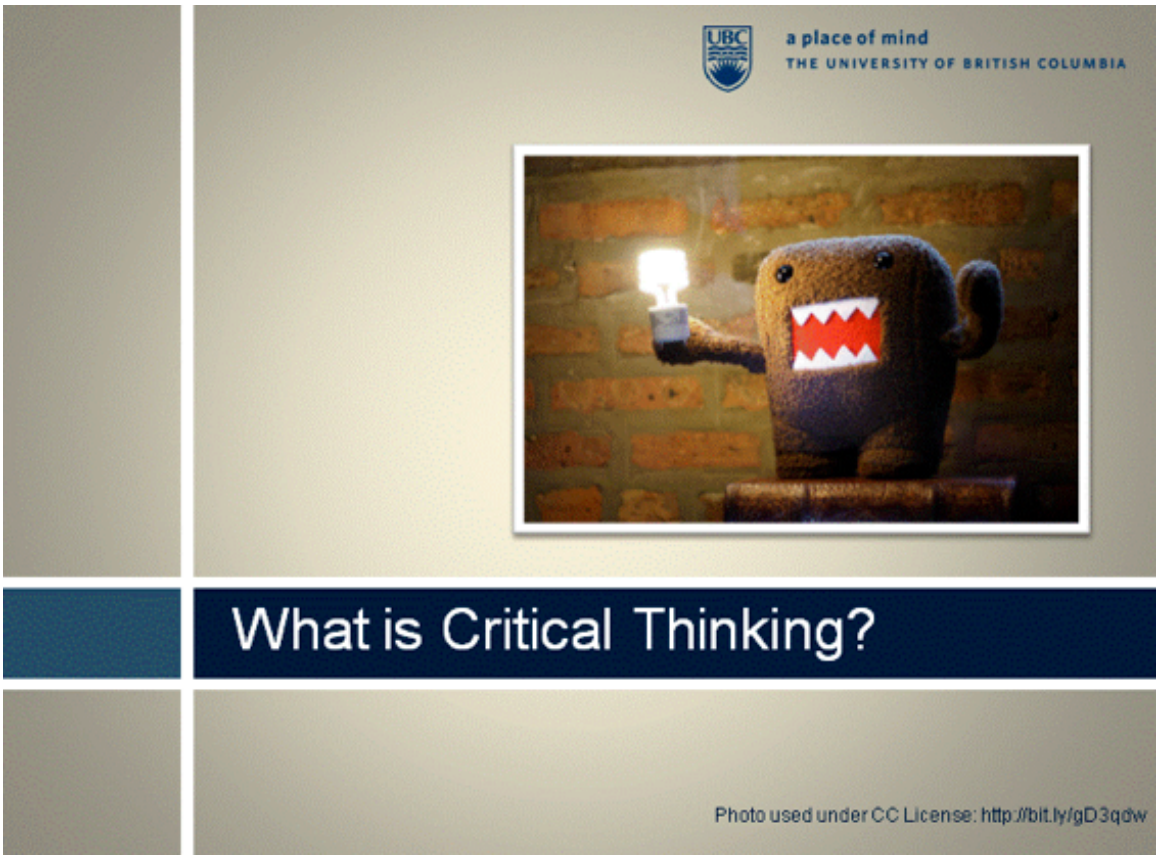


Encourage students to reflect over the sort of critical thinking strategies that they may already undertake. The above quiz is designed to have them consider how they have managed tasks and goals, reflect on whether they have confidence in their ability or seek to learn from their own experience, and whether they have applied critical thinking concepts in the coursework.

While participants are completing the survey, it may be a good idea to read these questions aloud. This will serve to share the content of the hidden poll slides with people viewing the archive copies and to ensure that there is no period of awkward silence while students are undertaking the activity.

Try to verbally summarize the results, stressing the commonalities of participants, and mention skills that will be learned through the workshop to address potential weaknesses.

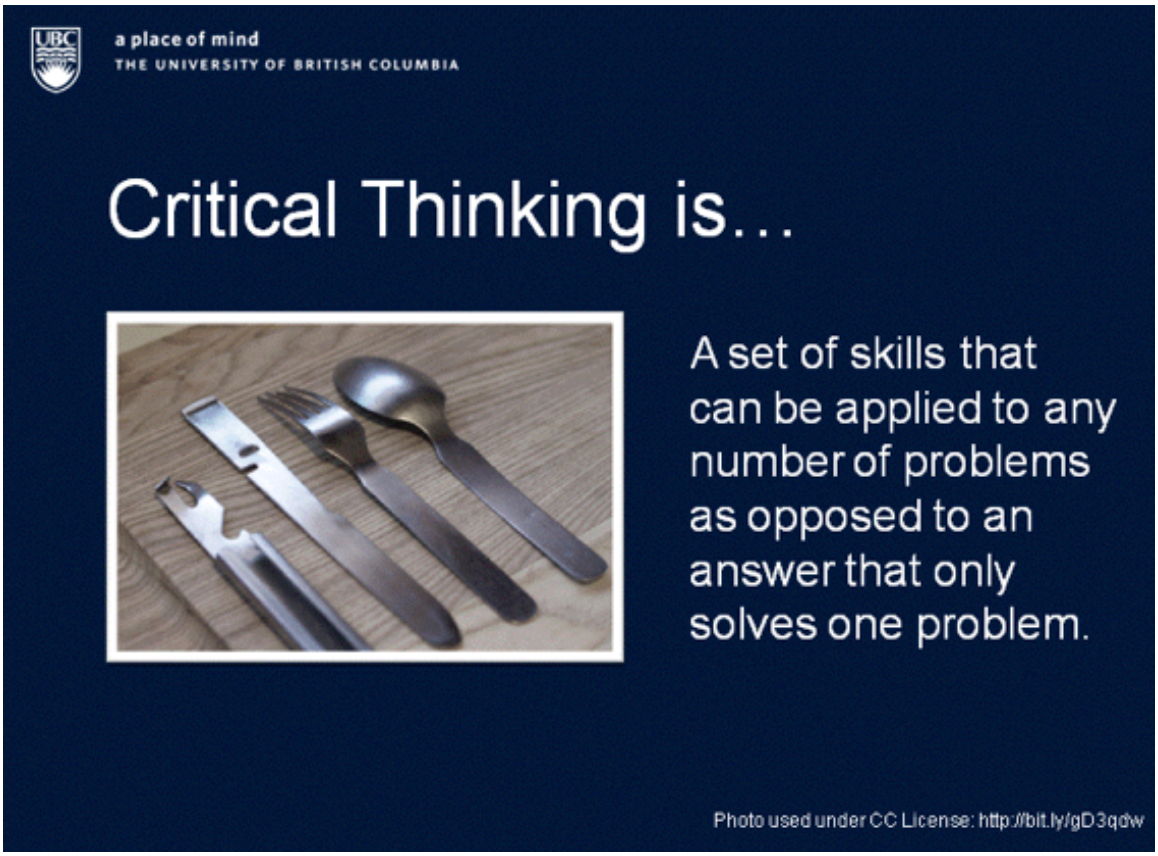
Part 1: What is Critical Thinking



What is Critical Thinking?

Reflective activity: Ask participants what are their definitions of and thoughts about critical thinking.

Definition



Critical thinking is a set of skills that can be applied to any number of problems as opposed to an answer that only solves one problem. Think of the old saying, "Give a man a fish, and he will dine tonight. Teach a man to fish and he will eat every night." Critical thinking is about acquiring skills that will help us deal with all problems, not just the solution a given problem or task.

It is not..

It is not…

Thinking hard

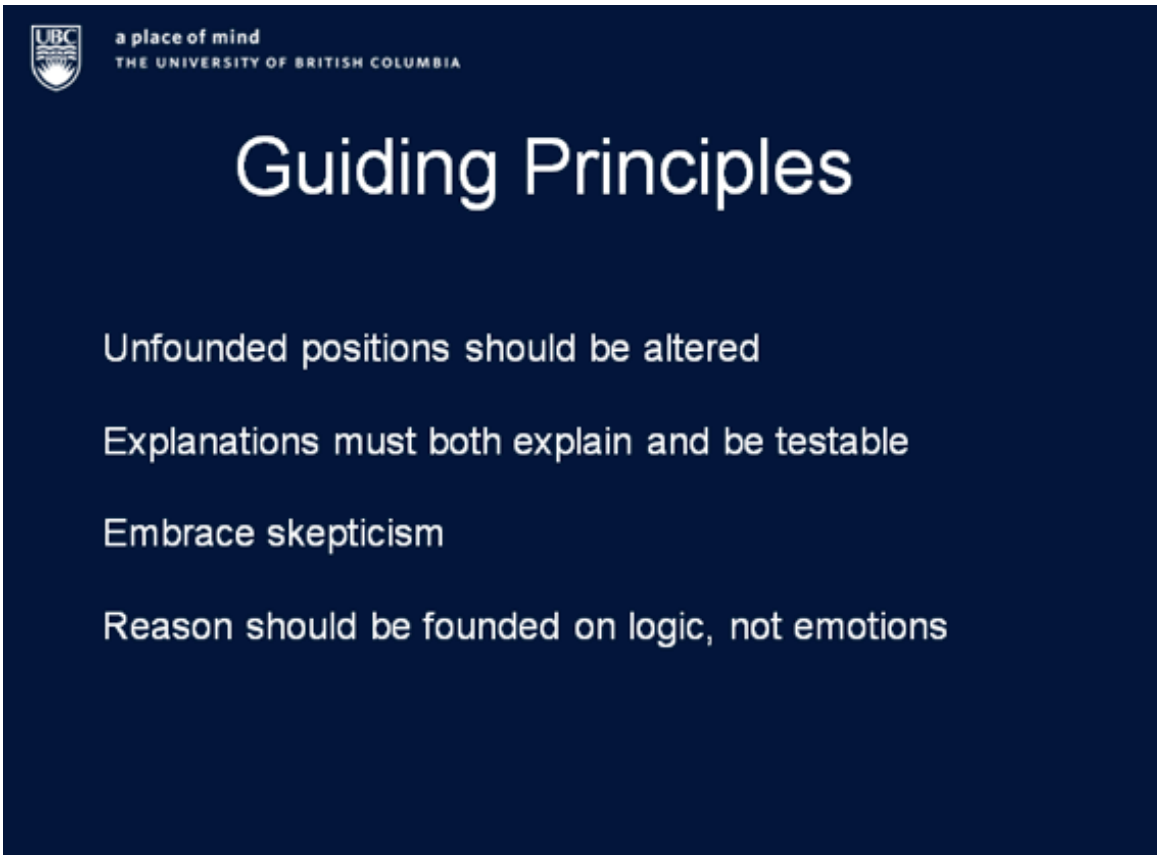
Expending a lot of energy

Spending a lot of time

Critical thinking sometimes has a bad rap in our mind because of the word critical. The word critical can have negative connotations, such as someone being critical of us, but it also has the meaning of being discerning and selective in thought. It is this latter definition that we draw upon for critical thinking.

It is worth thinking what critical thinking is not. Critical thinking is not thinking hard, expending a lot of energy or spending a lot of time. We've all probably experienced a time where we put a lot of effort into a situation or problem that did not bear fruit. You can spend a lot of time on false designs, on false premises, but that's not necessarily time well spent. Critical thinking is not going to be harder, it's about a different way of thinking.

Guiding Principles



We have certain guiding principles that we need to be consider with critical thinking. One of those is that we need to be prepared to alter our positions and opinions. If we find that our opinion is unfounded, then we need to alter it and we need to be prepared to do that.

We need to understand that all explanations must both explain and be testable. If we remember our science classes, I think that we can all agree with this in the spirit of the scientific method.

We need to embrace skepticism. Skepticism is not about naysaying everything, it's about being open to the possibility that something may not be the right answer. If you're not open to skepticism, then you're really just being dogmatic about something.

And a final guiding principle about critical thinking is that reason should be founded on logic and not emotions.

Barriers

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We have barriers to overcome…

We do have some barriers to overcome as well, because it's hard to overcome our emotions. It's not just about changing how we think, it's about addressing how we view the world.

Triple Threat

I call these barriers a triple threat.

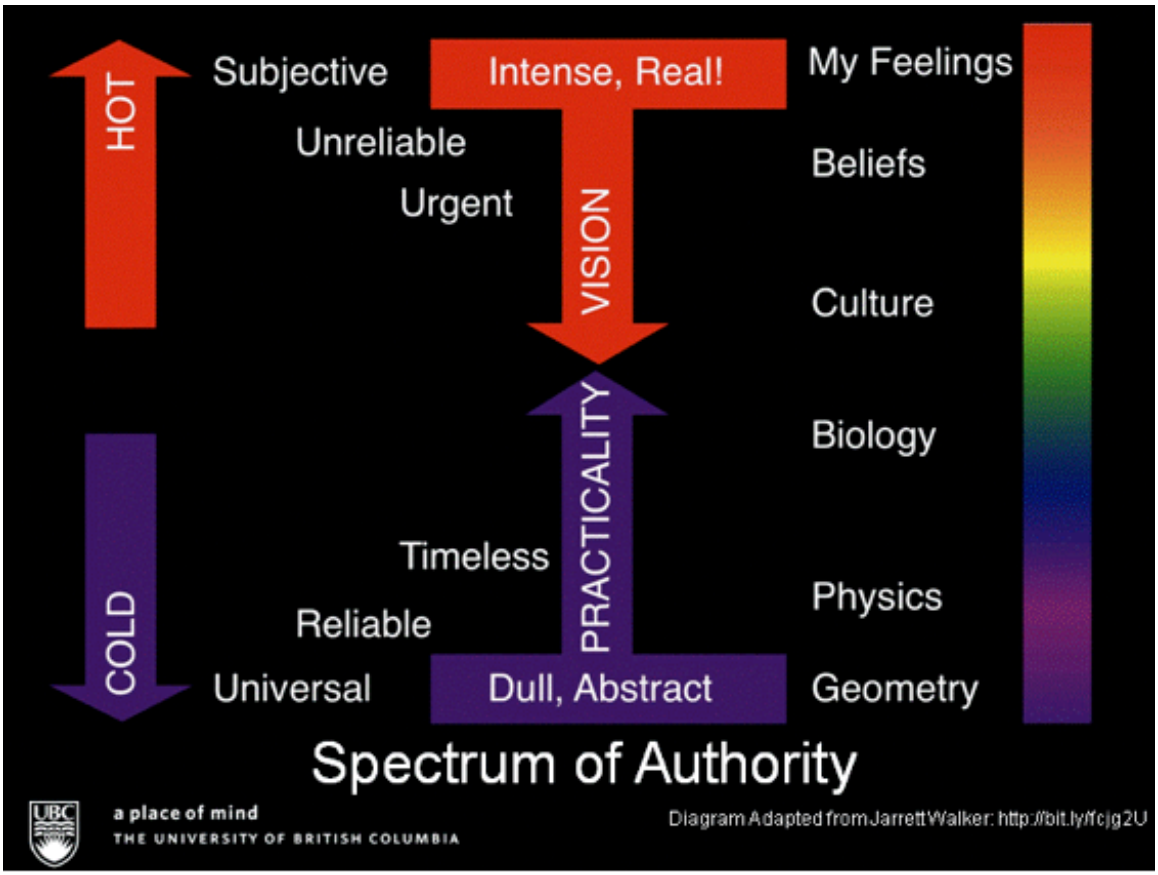
We have the threat of cultural conditioning. That is stereotyping people. Or either/or thinking is particularly bad. Something has to be black or white, good or evil, and it eliminates the entire spectrum of grey. Sometimes you may only have one option or the other, but if you view the world that way, you may actually bias something. If it's not X then it has to be Y. Is that a valid way of thinking? No! It's a dangerous way of thinking and can lead to all sorts of erroneous assumptions. A further aspect of cultural conditioning is imposing modern or anachronistic views onto the past. It's very easy to do this, to say I think this way so they must have in the past. So don't impose the values of your culture on others.

There is also the threat of resistance to change. That can manifest itself in a lot of different ways. Xenophobia, the fear of aliens, the fear of foreigners, foreign cultures or foreign influences. Centrisms can particular derive from politics where you subscribe to a certain political

party or belief and you will defend it. And prejudice, which can come from a lot of different sources, but really boils down to the fact that you know better and that everything else is lesser.

The third threat is empty abstractions. These include appeal to the sacred, where something has always been good therefore it must remain good. Or with demonization, characterizing something as bad without any really good foundation. Euphemism is another dangerous thing. Euphemism you call something by a good name. A lot of time we do this because we want to lessen the impact of something, but it also makes it more abstract and less easy to qualify or understand.

Spectrum of Authority



This diagram may look intense, so I'm hoping you have some questions about it. It was adapted from a presentation slide given by a transit planner by the name of Jarrett Walker. The spectrum of authority is important so that we can address where the power behind an idea or thought really comes from. This can be a great assessment tool for validating or invalidating the thoughts in a debate.

As you can see, the arrows are pulling us in different ways. The red arrows are our feelings. They are hot, intense and real, but they are also the source of our creativity and new things. Don't think that your feelings are necessarily bad. Some of the tools that we'll examine today incorporate our feelings and I think it's important that we address them. In the colder spectrum, we have practicality. It's dull and abstract, but it's also precise and includes things like geometry. You can measure an angle, you can measure the dimensions of something. It's universal and reliable and timeless, but if we rely completely on practicality, we may tend towards dogmatism, only

doing something because that's the way it's done and not being open to other things.

So you can see that this is a spectrum that moves back and forth. We move from geometry and physics where we have measurements and we have universal laws about how things interact with one another. On the other end of the spectrum we have things like feelings that are intense and real, but sometimes don't come from anywhere that we can specifically understand and we have beliefs which are more general because they come from the thoughts of a group of likeminded people. And then in the middle, we have biology and culture, which really draw on a spectrum of these.

Consider an Example

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Consider the Debate about Wind Power

Let's consider an example so that we can get an idea of how the spectrum of authority might factor in to a debate with multiple voices and authorities.

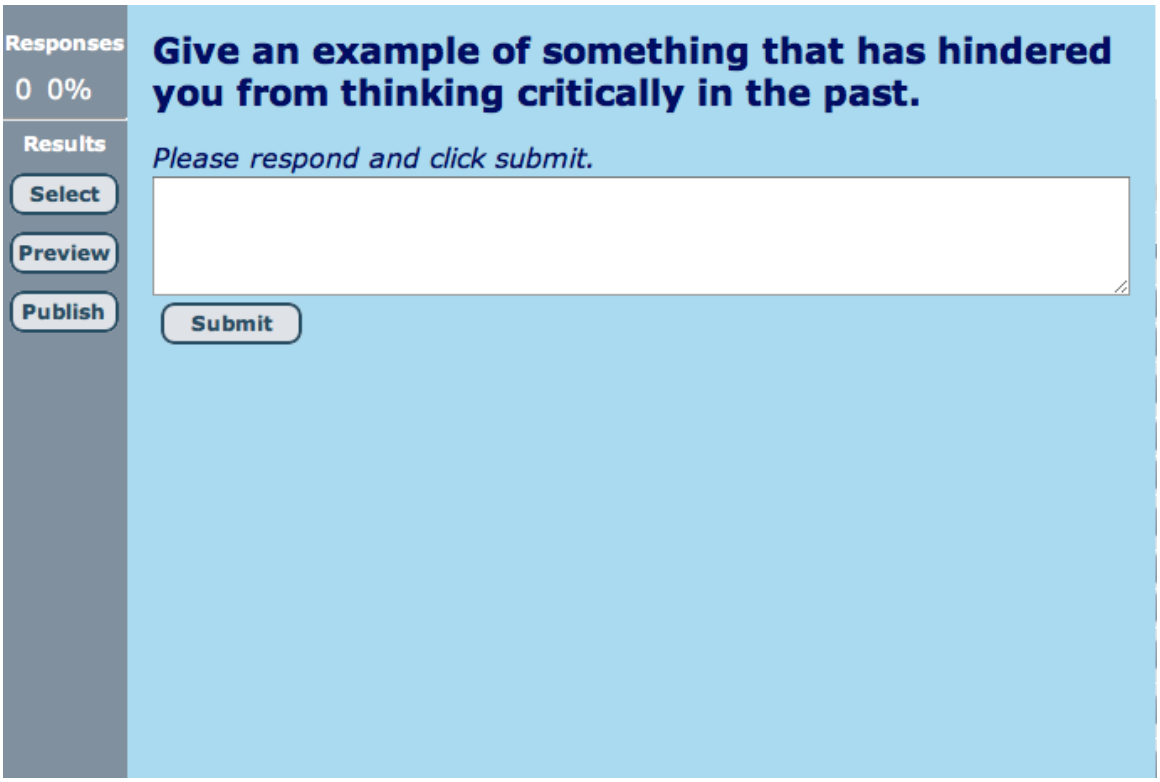
Consider the debate around Wind Power.

Geometry: Wind turbines use up a quantifiable space and constant space (as opposed to oil which draws on a finite resource)
Physics: Wind power generates renewable energy
Biology: Wind turbines affect the local environment. So you can say this from a number of perspectives. They kill birds or affect the air quality in an area. These are universal factors, but they only effect some people or things and not constantly.
Culture: Wind turbines negatively affect property value. Why do they do that? They do it because culture demands that when something ugly or obstructive is placed near a property, the value must go down. There's no real universal reason for this, but it is quantifiable.

Beliefs: Wind turbines negatively affect the health of people. That's a belief, but it's not a proven belief. As you can see, we're getting to the hot part of spectrum. It is interesting that beliefs can drive scientific research because if we just dwelled on the universal concepts, we would never have investigated the health consequences of these things. Because it is worth investigating.
Feelings: Wind turbines are ugly and I don’t want to see one in my backyard. That's a gut reaction and personal belief and one to which you are entitled.

As you can see there's a broad spectrum of authorities that are involved in one simple debate. It's useful to use the tool of the spectrum of authority to try and draw out where are arguments coming upon, what are they drawing upon? It's not to invalidate feelings or culture, but to make you aware of the avenues that people are coming from.

Poll



Give an example of something that hindered you from thinking critically in the past.

Filler: Give some leading examples such as politics or beliefs. You may also want to give a personal example of something that has hindered you in the past.

Reminder: This is a good time to remind those watching the archival copy that you will not be able to see the polls. Make sure to narrate answers back for the benefit of the entire class. You may need to summarize if there are a lot of responses or similar responses.

Part 2: Basic Methods and Tools

We are going to consider some basic methods and then we'll move towards more advanced methods that may help us deal with varying information or multiple authorities.

Force Field Analysis

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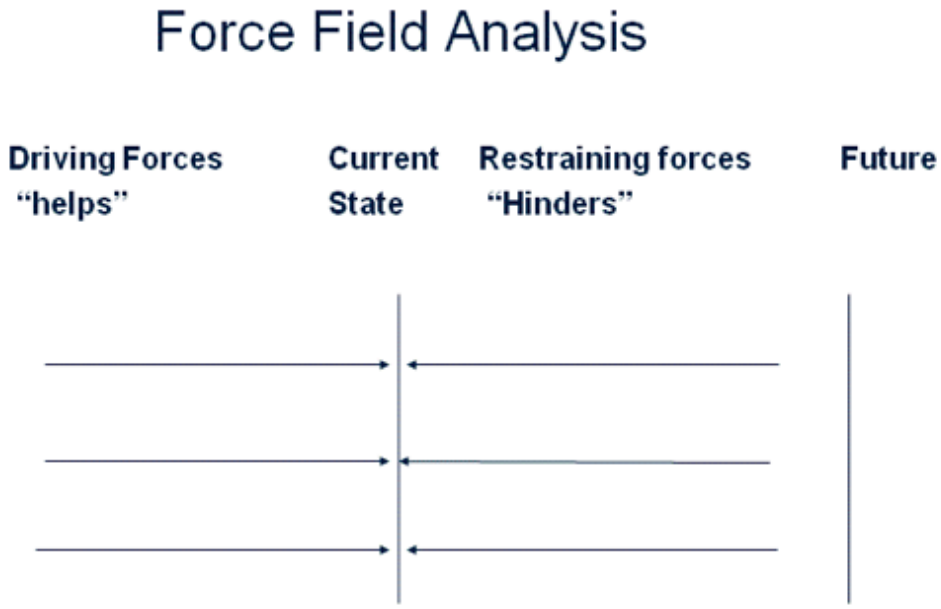
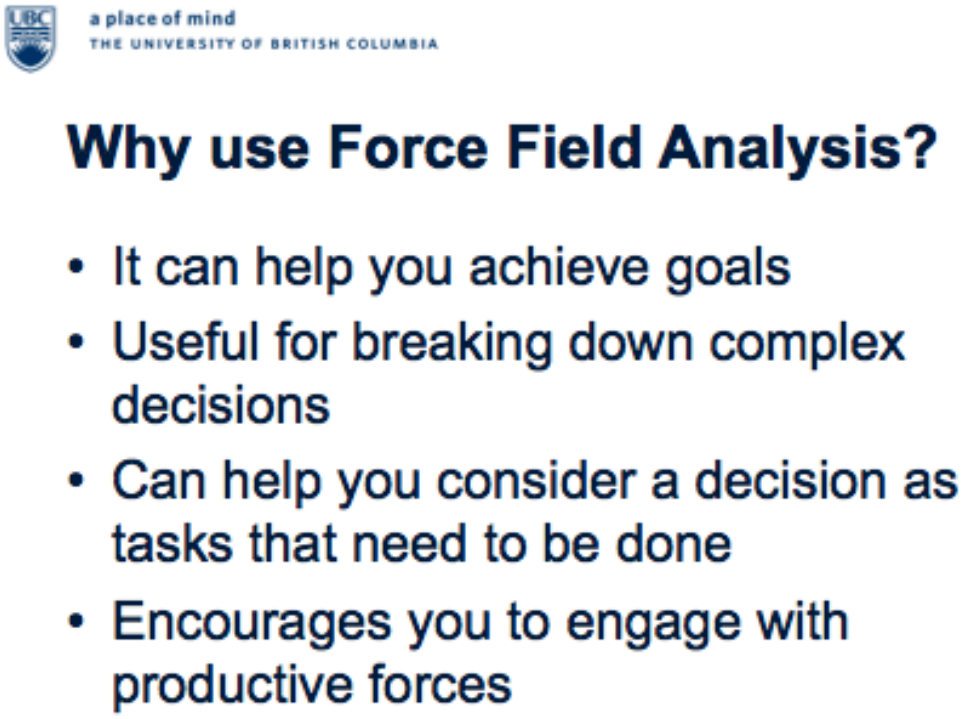


Force Field Analysis is about helping us make a decision or choice by breaking it down into two forces.

This method is not about thinking in an either/or situation or making it into a false dichotomy. Instead we're thinking about forces: What is helping and what is hindering you from doing domething.

As you can see, there's a current state bar in the middle and that's the force field. What you want to do is move the current state bar towards the right or the future. You can do this in two ways. You can add more productive forces or you can reduce the forces that are hindering you from accomplishing something.

Why use Force Field Analysis?



It can help you achieve goals. In particular, if you're trying to make a decision or figuring out how to do something. A lot of people will make a list of pros and cons, but instead try to think of things as active forces. Think actively what is going to help you or hinder you from accomplishing a goal.

Mind Mapping

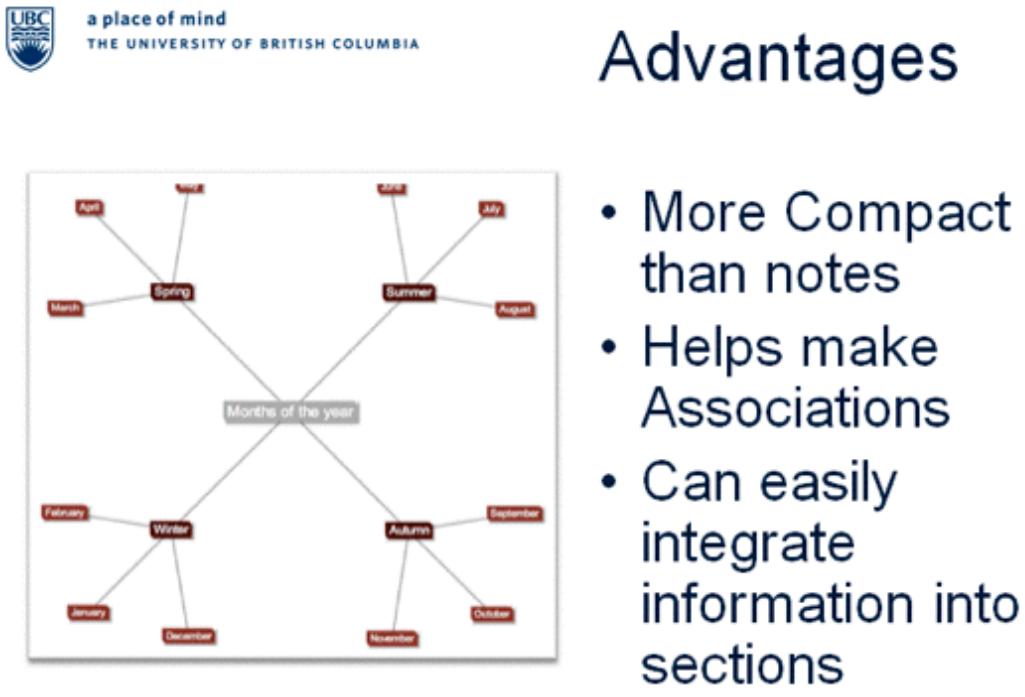
A second basic strategy for critical thinking is mind mapping. This has become increasingly more common in recent years and there are now dozens of computer programs and internet applications that can assist you quickly make one.

A mind map is a two dimensional graphical drawing that shows the links and interfaces between topics.

To make a mind map:

1. Write the title of the subject in the centre of the page,
2. As you come across major subdivisions or subheadings of the topic draw lines out from this circle and label them,
3. As you "burrow" into the subject and uncover another level of information (further subheadings, or individual facts) belonging to the subheadings above, draw these as lines linked to the subheading lines.
4. Finally, for individual facts or ideas, draw lines out from the appropriate heading line and label them

Advantages of Mind Mapping

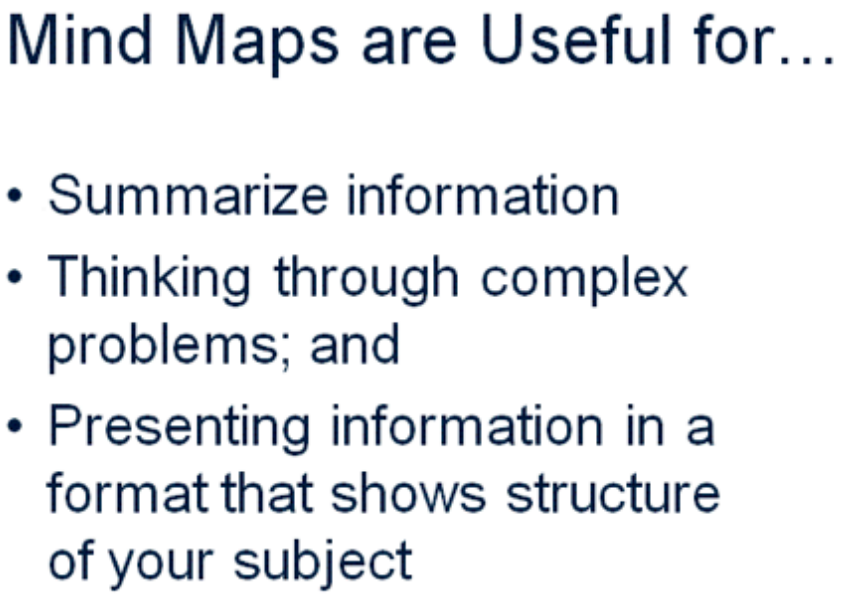


Mind maps pose a number of advantages.

They are more compact than notes, help us draw associations between ideas and can easily integrate later information into sections.

Note: You may want to push to an easy to use online mind mapping application such as www.text2mindmap.com. Text2mindmap requires no download or installation and can be easily used with key terms to quickly make a mind map alongside traditional notes.

Mind Maps are Useful for...



Mind Maps can be useful for:

Summarizing information;
Consolidating information from different research sources;
Thinking through complex problems; and
Presenting information in a format that shows the overall structure of your subject

You may want to use them to supplement traditional notetaking or even replace it, outline the structure of a presentation, or explore the various topics of a research paper.

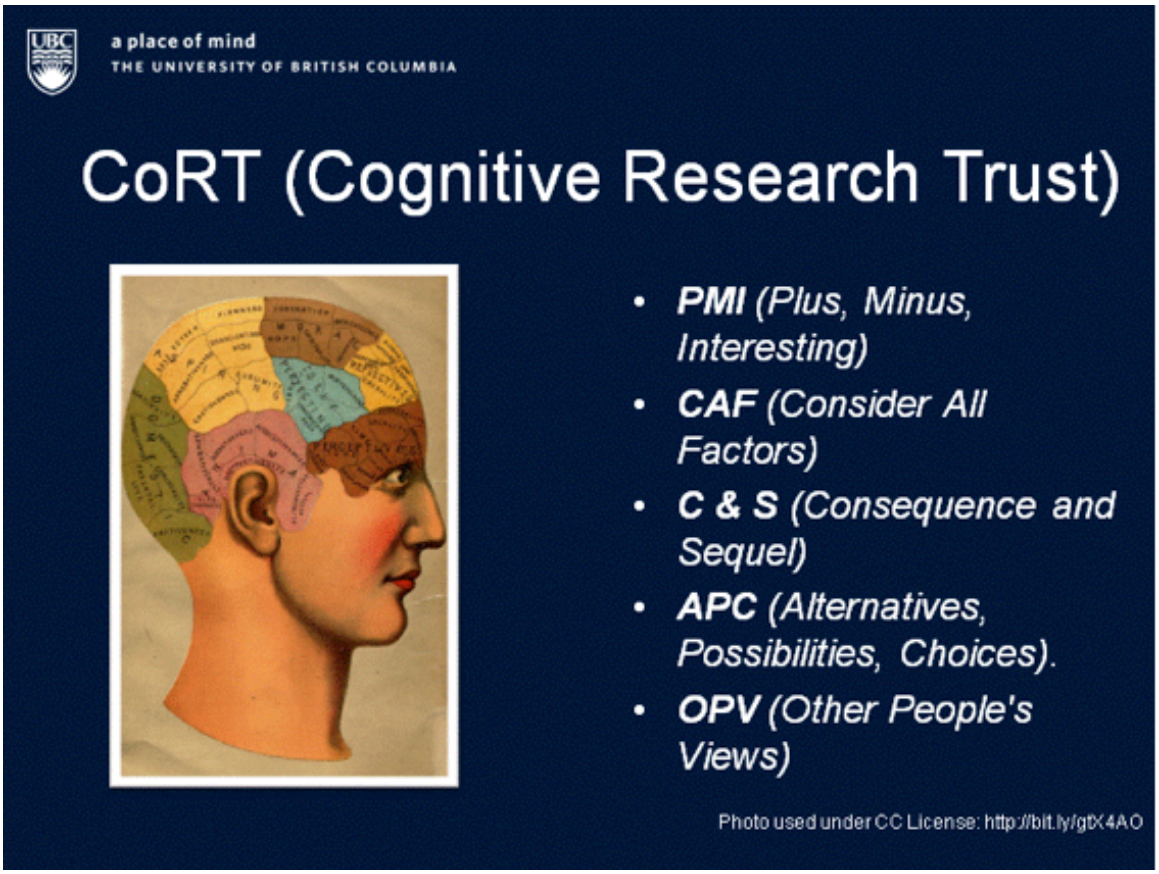
Student Reflection

Discussion: Ask the students to discuss if they find these tools useful or if they have experience using them.

Part 3: Advanced Methods and Tools

Mind mapping and force field analysis are easy to include in everyday critical thinking. There are some more advanced methods that we can consider for incorporating critical thinking into our research design.

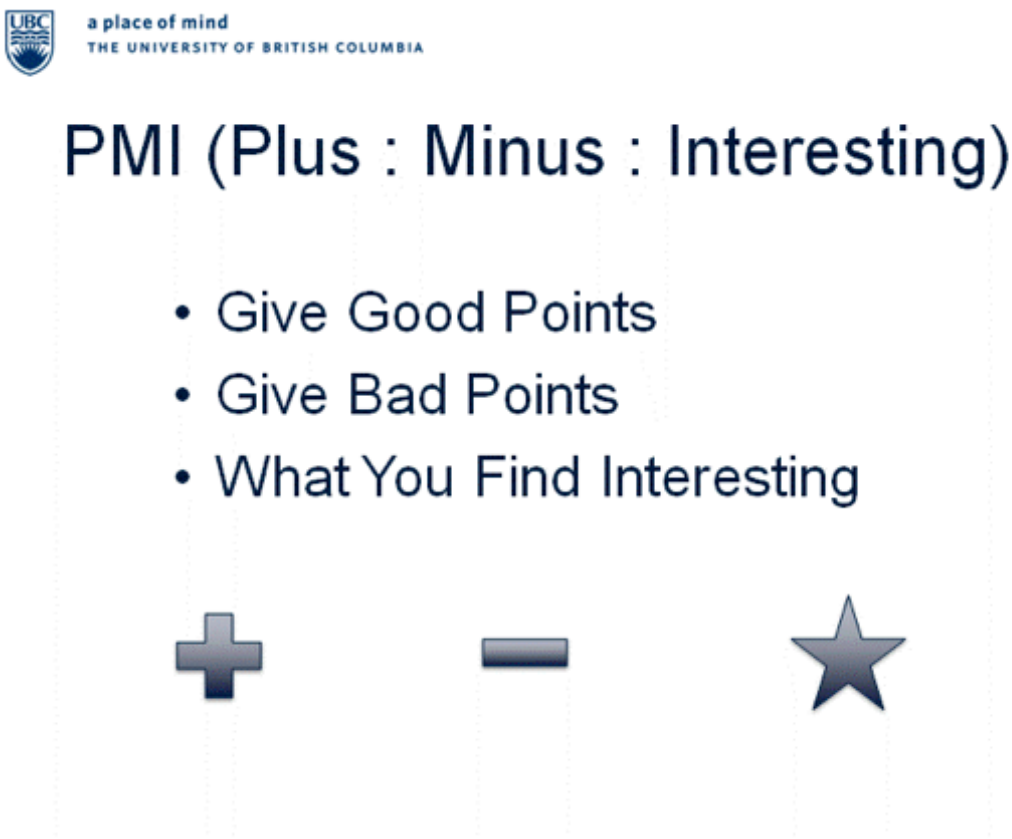
CoRT (Cognitive Research Trust)



CoRT stans for Cognitive Research Trust. CoRT was designed by cognitive scientist Edward de Bono in teh 1970s as a full curriculum of 60 lessons to help, but we are only going to examine the skills necessary for assessing the breadth of a topic.

Interesting fact: Edward de Bono coined the term "lateral thinking."

PMI (Plus, Minus, Intersting)



PMI stands for Plus - Minus - Interesting.

Instead of instantly liking or disliking an idea, you can use a PMI test to enumerate good and bad points. It also allows you to consider whether there are interesting points about a topic. This last factor is important because it is imperative that we have some interest or stake in our research.

CAF (Consider All Factors)

CAF stands for Consider All Factors.

It is important to determine all the factors that may affect a topic. If you start by only focusing on one factor, you may make an erroneous hypothesis or ignore some crucial piece of information. When you're analysing the work of others, it is important to determine if there were factors that they ignored. These may provide fruitful avenues of research.

C&S (Consequence and Sequel)

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C&S (Consequence and Sequel)

- Immediate
- Short Term
- Long Term

C&S stands for Consequence and Sequel.

These are big words, but they stand for considering the immediate, short and long term effects of our research. This may seem very obvious in disciplines like the life sciences and engineering, but it is also important in fields like the humanities and social sciences. If we don't consider the effects of our scholarship, how can we justify its value? How will our research affect future scholarship? It is important to consider that our work exists in a continuum of scholarship and that we stand on the shoulders of giants. How will our work support future scholarship?

APC (Alternatives, Possibilities, Choices)

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APC (Alternatives, Possibilities, Choices)

- Consider alternatives
- Incorporate all possibilities
- Factor in choice

Sir Arthur Conrad Doyle, the author of the Sherlock Holmes mysteries, is ascribed with the saying that once you've eliminated all the other possibilities, the one remaining, no matter how unlikely, must be the truth. The importance of this saying is that we can only make empowered and strong decisions based on all the information to hand.

Many problems may appear to have obvious answers, but are they the only ones? Make sure you consider alternatives and incorporate all possibilities. Even if you disprove these alternatives, your own argument is stronger for having considered them. Many people get trapped researching a single factor or possibility and miss other fruitful avenues of research.

OPV (Other People's Views)

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OPV (Other People's Views)

- Consider the points of view of others
- Compensate for them
- Incorporate them

OPV stands for Other People's Views.

Our research builds on the work of other scholars, so it is important that we also determine their point of view and the authority behind it. It is important to incorporate and compensate for potentially conflicting point of views or just show that we've considered other possible avenues of research. Our own arguments will appear stronger for being based on truly thorough research.

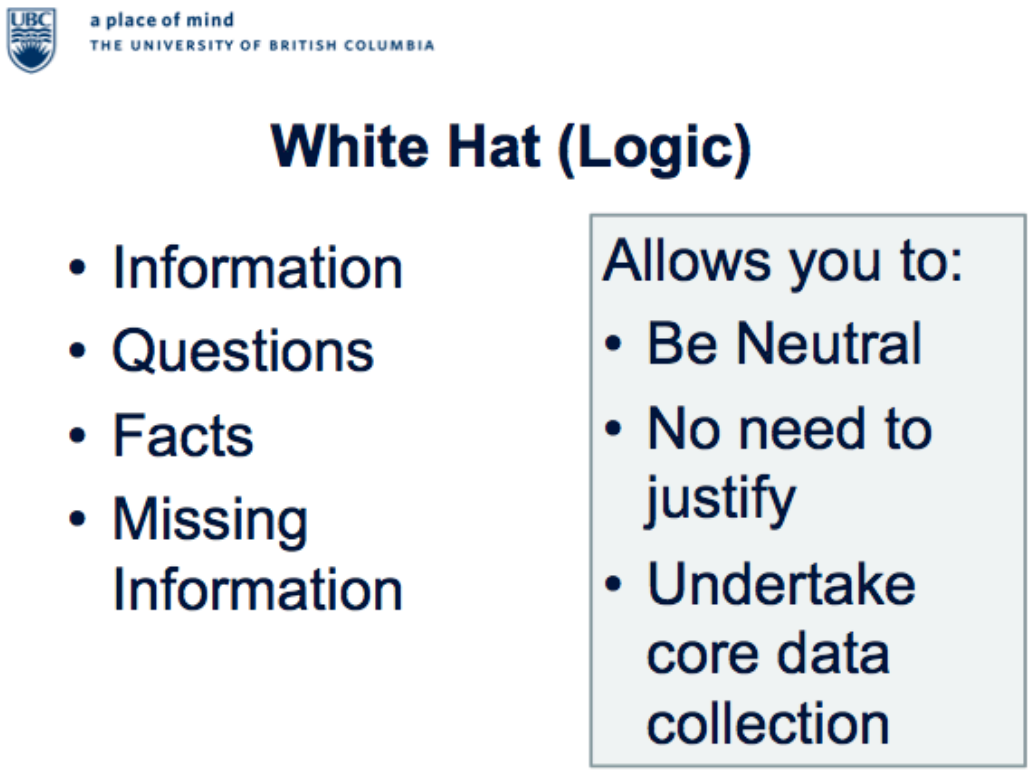
Review: CoRT can be a good system for exploring external factors and opinions that may influence or affect how we do research.

Six Hat Thinking

A second technique pioneered by Edward de Bono is called Six Hat Thinking.

Six Hat focuses on extending how we think by forcing us to consider each perspective separately using the analogy of different coloured hats.

White Hat (Logic)

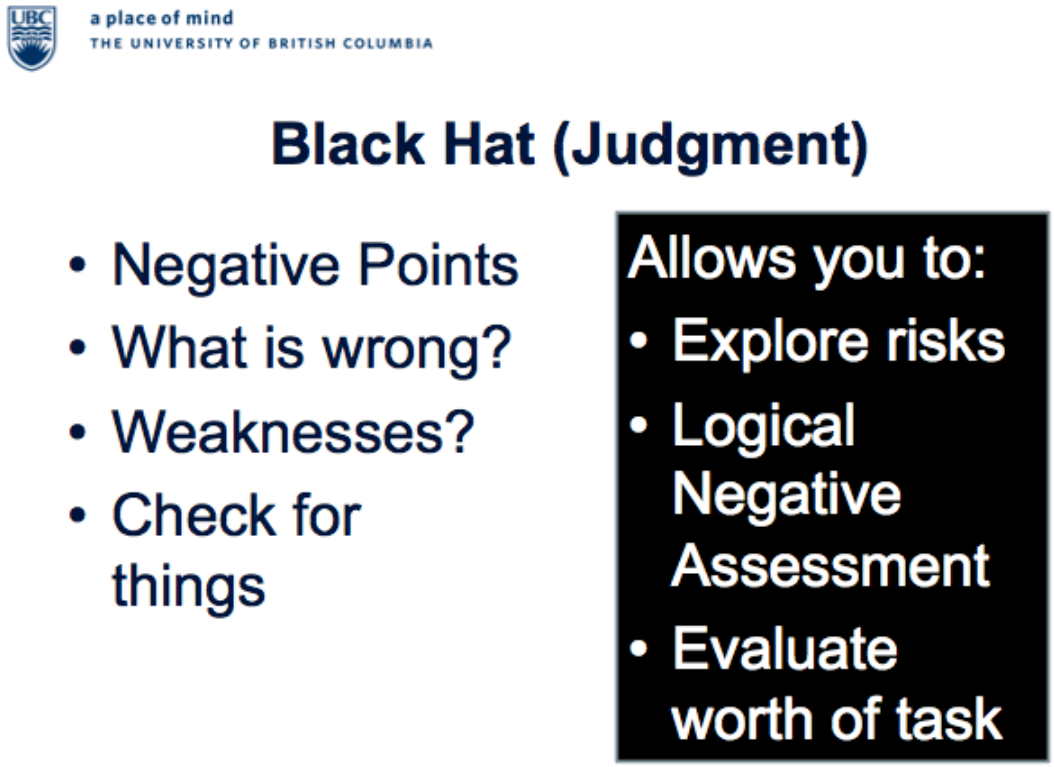


The White Hat is Logic.

It allows you to list all the information, questions and facts associated with your problem. It also allows you to consider any possible missing information. You should also consider the type of information. Is it formal information such as data, statistics or reports? Or personal information such as personal experience? Nothing should be invalidated, just categorized.

The White Hat allows you to be neutral, collect facts without any need to justify, This is a good hat to wear as you begin research so you can see the breadth of what's our there.

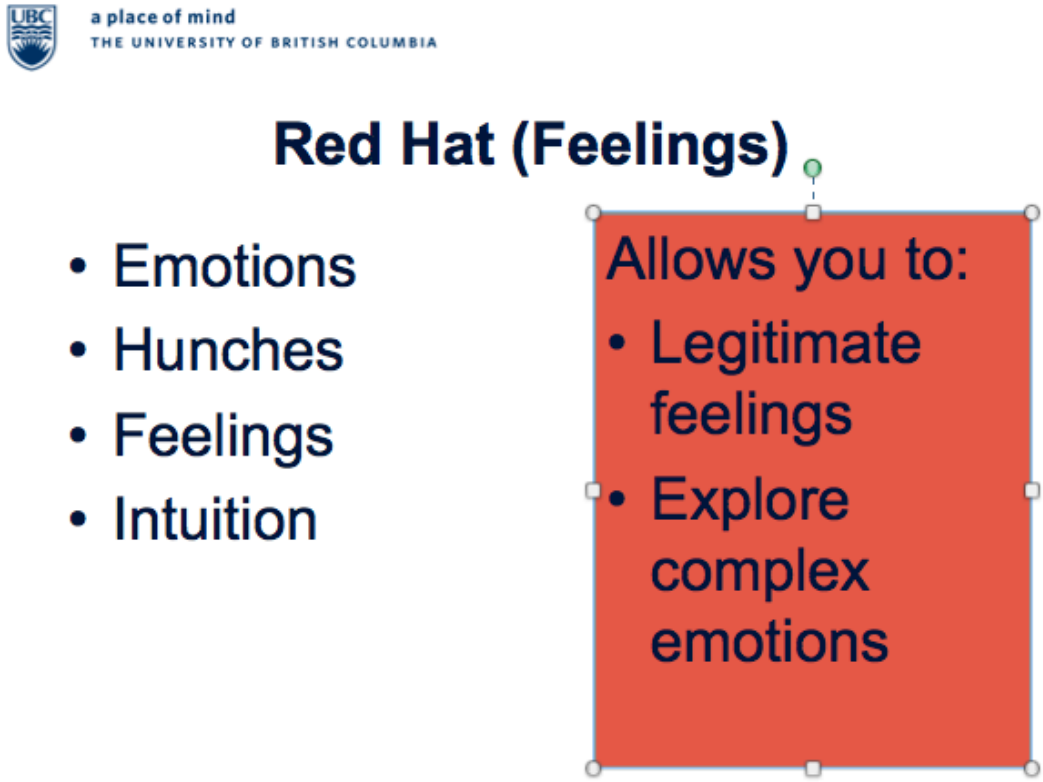
Black Hat (Judgment)



The Black Hat is judgment. This can be a very fun hat to wear because it allows you to consider all the negative points associated with your research and consider weaknesses and errors. This is an excellent hat for acting as a check on things.

The Black Hat allows you to explore risks without taking any. Conducting a logical negative assessment is imperative in fending off possible criticisms by other researchers. This hat is also important for determining whether there is even value in undertaking the research. This is a valuable hat to undertake early on in your research to determine the worth and viability of your research.

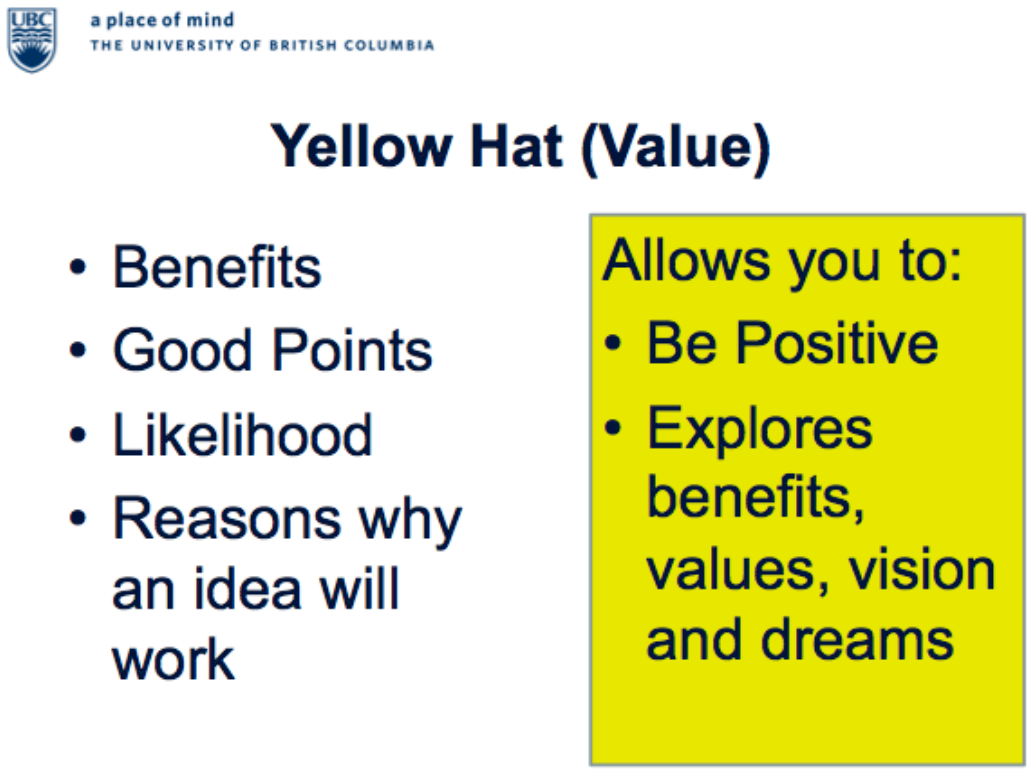
Red Hat (Feelings)



The Red Hat represents our feelings. This also covers hunches, emotions, and intuition. It's important that we recognize the role our feelings play in how we think so that we can account for them in the research process.

The Red Hat allows us to legitimate our feelings about our research but also consider what kind of mental support we will need to undertake the research, including addressing any emotional bias.

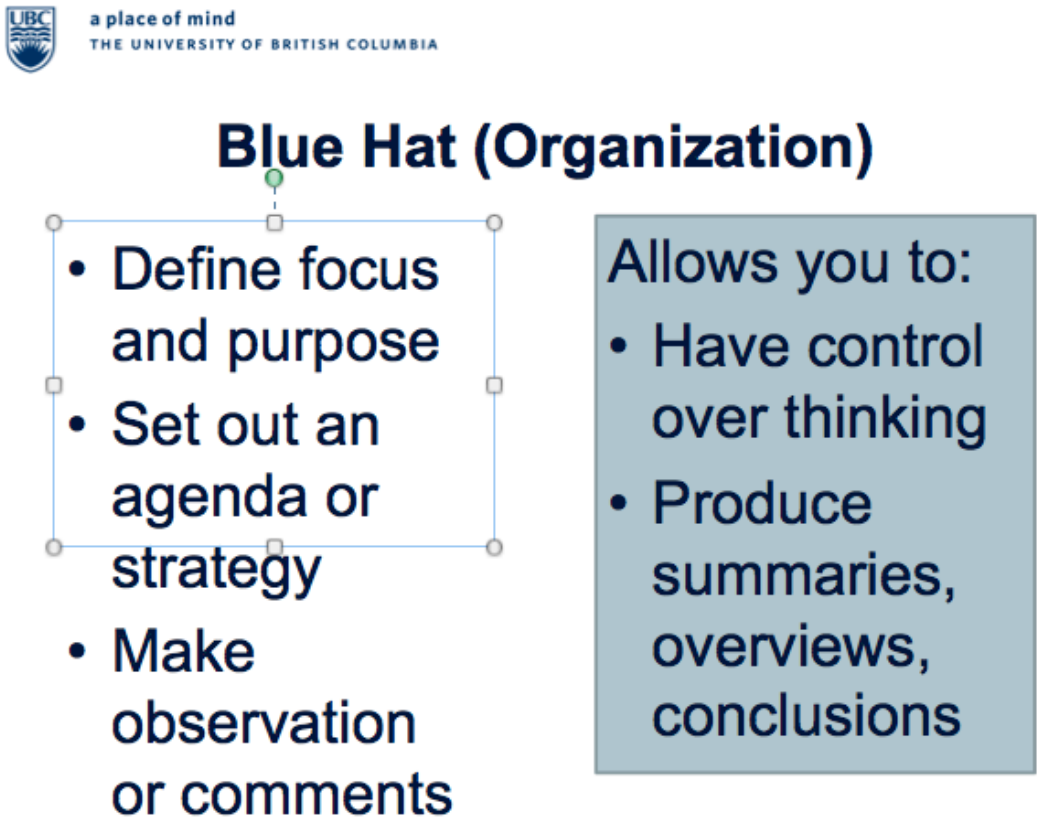
Yellow Hat (Value)



The Yellow Hat represents Value and can be seen as the opposite of the Black Hat. It allows us to explore all the good things about our research including its benefits or the likelihood that it will succeed. One of the big advantages of this hat is that it focuses on the reasons why an idea will work.

The Yellow Hat allows you to be positive and to explore the benefits of your work. It can help you figure out how you can get closer to your ideal vision by focusing on the positive outcome and addressing the basis of your positive assumptions.

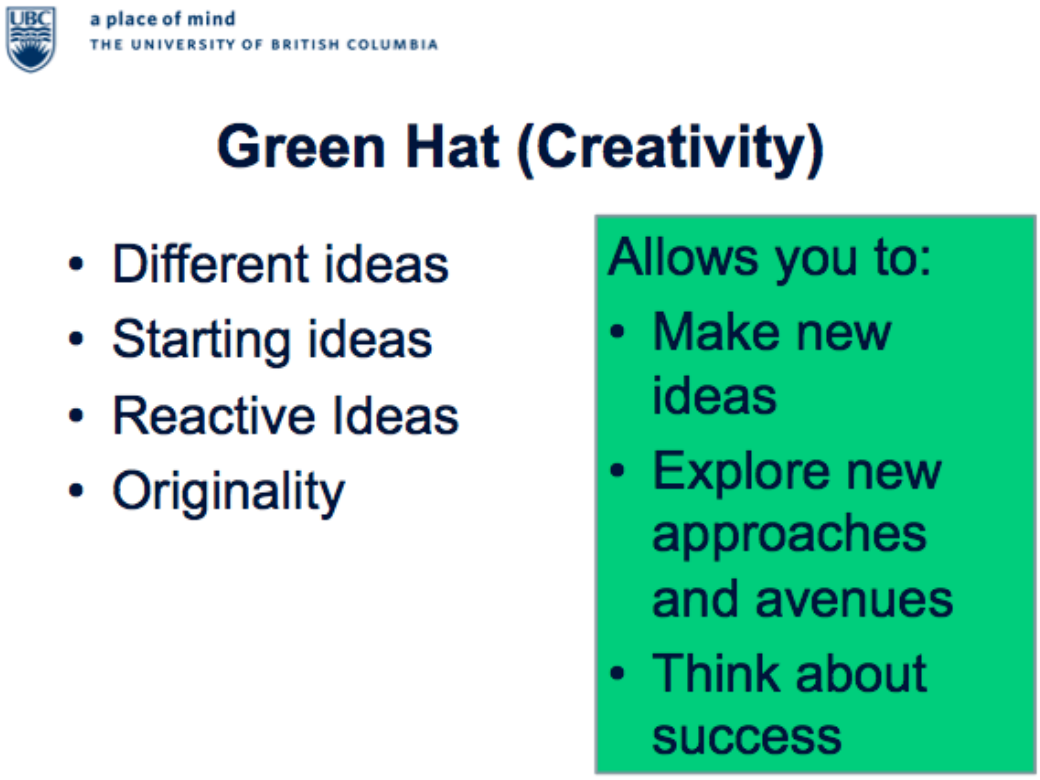
Blue Hat (Organization)



The Blue Hat is Organization. This hat forces us to define the focus and purpose of our research and to set out an agenda. In an abstract sense, the Blue Hat represents metacognition (or thinking about thinking) as we make observations or comments about our thinking process.

The Blue Hat allows us to take control over our thinking process and helps us define the steps that will help us accomplish our goals. This Blue Hat allows us to create timelines, define project needs, produce summaries and overviews, and work towards the final research product.

Green Hat (Creativity)



The Green Hat represents Creativity. This is an important aspect for generating new ideas. It can be a good place to explore different or alternative ideas. The Green hat can take the data collected under the guise of the white hat to generate starting ideas. Or even being reactive by using an idea as a starting point for new ideas. Some of the tools of the Green Hat are forming hypotheses, speculative thinking, or even lateral thinking.

The Green Hat allows us to make new ideas and explore new approaches and avenues of sucess. It is good for thinking about what else we need to be considering, constructing contingency plans, and making alternative plans.

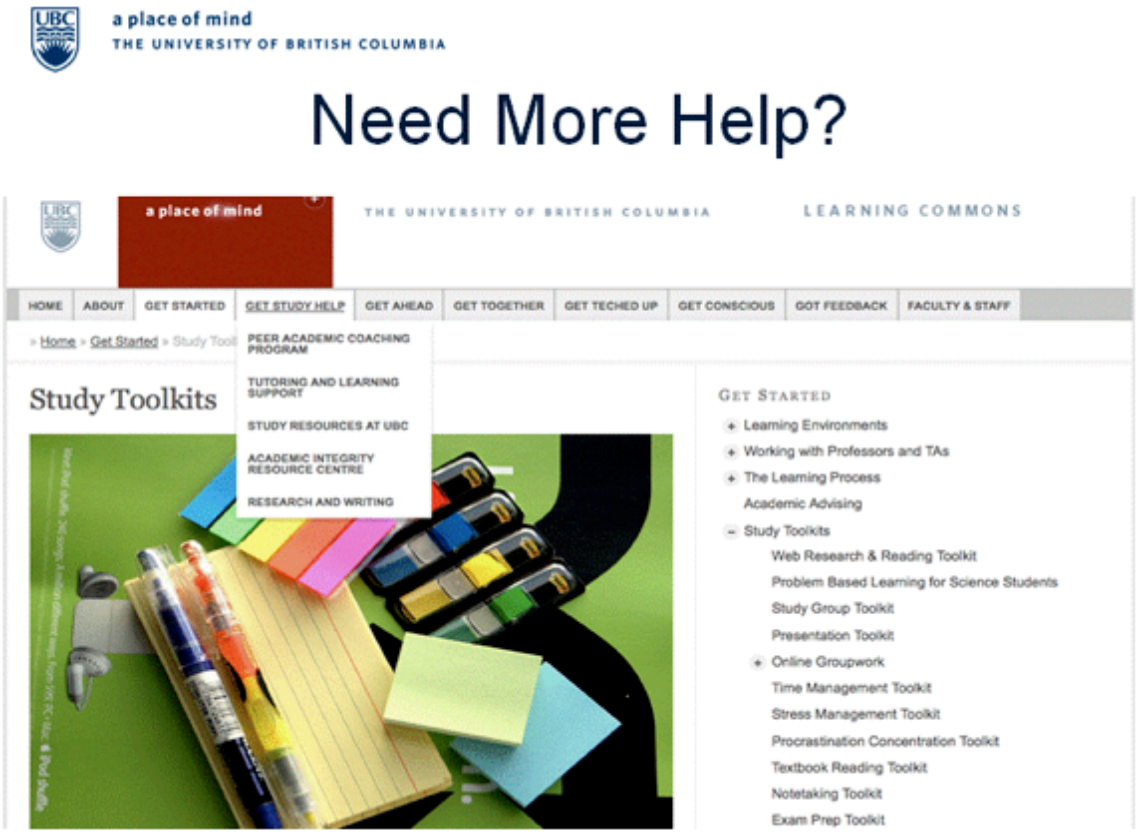
Discussion

What are your thoughts about CoRT and Six Hat Thinking?

Poll

List two strategies that you will take away from the workshop.

Need More Help?



Push link to Learning Commons Critical Thinking Study Toolkit and mention that the page has further resources.

http://learningcommons.ubc.ca/get-started/study-toolkits/critical-thinking-toolkit/

Push the survey link.

Thank the class for their participation.

End Archiving.