



Meta learning and thinking skills

Questions for building metacognition
Formative assessment

effective questioning

Questioning is most effective when it:

- reinforces learning objectives
- maintains the flow of learning in the class
- includes sequences of questions
- involves all pupils
- engages pupils in thinking for themselves
- encourages pupils to speculate and hypothesise
- promotes justification and reasoning
- encourages creative thought and imagination and innovative thinking
- models higher order thinking
- creates an atmosphere of trust: pupils' opinions and ideas are valued
- shows connections between previous and new learning
- encourages pupils to listen and respond to each other as well as the teacher
- seeks the views and opinions of pupils
- engages emotions
- creates a sense of shared learning



- Dilt's kader en oefeningen in chunken
- Feedback up forward
- 50 questions for metacognition
- Coaching communication basis elements
- The growth mindset (regarding to learners) for teachers a key element



50 Questions To Help Students Think About What They Think

- by Lisa Chesser
- Using the right questions creates powerful, sometimes multiple answers and discussions. Aristotle said that he asked questions in response to other people's views, while Socrates focused on disciplined questioning to get to the truth of the matter.
- <http://www.teachthought.com/critical-thinking/questioning/metacognition-50-questions-help-students-think-think/>



Reflection & Collaboration

1. What do you think about what was said?
2. How would you agree or disagree with this?
3. Are there any other similar answers you can think of with alternative routes?
4. Does anyone in this class want to add something to the solution?
5. How might you convince us that your way is the best way?



Self-Reflection

6. How did you determine this to be true?
7. Why didn't you consider a different route to the problem?
8. Why does that answer make sense to you?
9. (in response to an answer):...what if I said that's not true?
10. Is there any way to show exactly what you mean by that?



Reasoning

- 11. Why do you think this works? Does it always? why?
- 12. How do you think this is true?
- 13. Show how you might prove that?
- 14. Why assume this?
- 15. How might you argue against this?



Analysis

- 16. How might you show the differences and similarities?
- 17. What patterns might lead you to an alternative answer?
- 18. How many possibilities can you think of and why?
- 19. Predict any number of results?



Connections

- 20. How does this relate daily occurrences?
- 21. Which ideas make the most sense and why?
- 22. Which problems feel familiar? Why?
- 23. How does this relate to current events?
- 24. What kinds of examples make this problem workable?
- 25. What other problems fit this style or example?



Literary Questions

- 26. How did any of the characters or events remind you of yourself? Why?
- 27. How did the character's actions affect you? Explain.
- 28. If you were this character, how would the story change?
- 29. What surprised or confused you about the characters or events? Explain.
- 30. Why do you think the author wrote from this character's view?
- 31. What do you think the author is trying to accomplish?
- 32. How is the author thinking about the world?
- 33. How would the story change from another character's view?
- 34. Why do you think this story could actually happen, or not?
- 35. How can this story teach us something about our lives?
- 36. How do you think the characters resolved the major conflict in the story?
- 37. How would you have resolved it?
- 38. How would you change the end of the story and why?



Science and Social Questions

- 9. What's the purpose for this experiment or argument?
- 40. Would you elaborate on the purpose of this?
- 41. What issues or problems do you see here?
- 42. What evidence or data are given that help make this worthwhile?
- 43. What are some of the complexities we should consider?
- 44. What concepts help organize this data, these experiences?
- 45. How can you justify this information?
- 46. How can we verify or test that data?
- 47. What details can you add to make this information feel more complete?
- 48. Which set of data or information is most relevant or important?
- 49. How is all of this consistent or inconsistent?
- 50. How am I seeing or viewing this information? Objectively or subjectively? Should I then change my view?



Robert Dilts's Logical Levels model

- Anyone familiar with NLP will probably have come across Robert Dilts's Logical Levels model. It is a great tool for exploring how and why we do what we do. It works at a system level and provides a powerful way of creating sustainable change in an individual or organisation.
- It looks at our thinking across six levels:
 - **The Environment level** involves the external conditions in which you live. Questions such as: "Where?", "When?" and "With whom?" are typical Environment level questions.
 - **The Behaviour level** refers to what you do in different environments.
 - **Capabilities** (whether mental, physical or emotional) describe how you do what you do. What are your skills and strategies for taking action?
 - **Beliefs and Values** define why you do something and shape the way you perceive the world. Beliefs can be both empowering and limiting.
 - **Identity** consolidates whole systems of beliefs and values into a sense of self. It defines who you think you are, as an individual or an organisation.
 - **Purpose** involves your connection to something that goes beyond yourself. At this level, useful questions are: "For whom am I doing this?" and "What is my purpose?"



Chunking to vary the level of detail

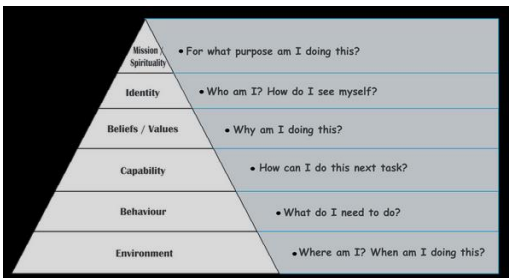
Chunking down

- How did you that?
- Why did that happen?
- What happened about...?
- What, specifically...?
- Tell me more about...?
- What is the root cause of all this?

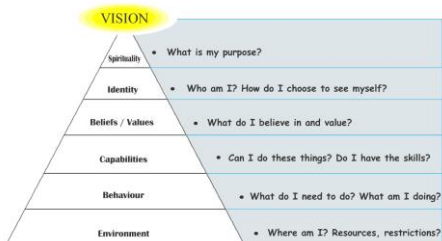
Chunking up

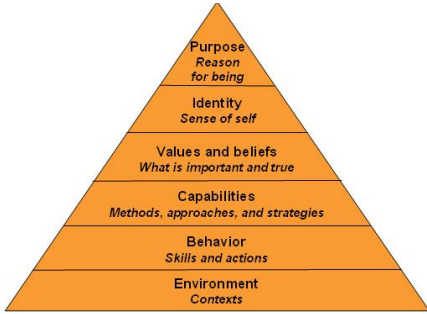
- What does this mean?
- Let's look at the bigger picture...
- How does that relate to...?
- What are we trying to achieve here?
- Who is this for? What do they really want?

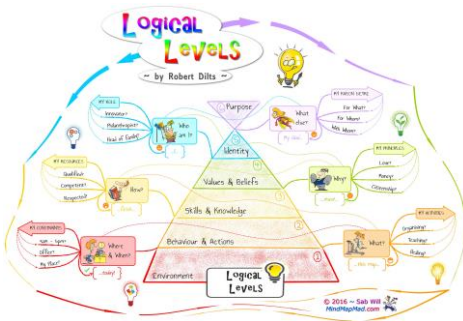




Neuro Logical Levels by Robert Dilts
Modified by Adrian Cahill

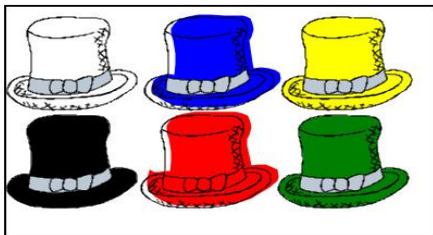






questioning: framework

The six thinking hats (De Bono)



six thinking hats



intuition



information



optimism



planning



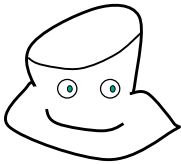
creativity



discernment

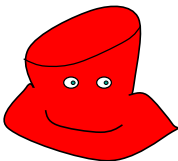


white hat (fact-hat)



- What is the available and relevant information?
- facts/figures
- neutral

red hat (guts-hat)



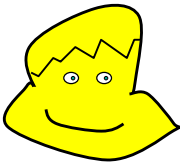
- guts feelings
- emotion and intuition
- spontaneous
- no account

black hat (judgement-hat)



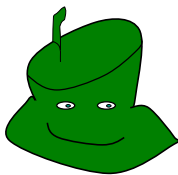
- devil's advocate
- obstructionist
- spot logical errors
- spot difficulties and dangers
- It will not work!
- objective/ arguments

yellow hat (plus-hat)



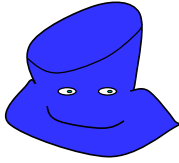
- positive, bright
- constructive
- probe value and benefit
- look for (new) opportunities

green hat (idea-hat)



- alternatives!
new ideas!
- growth, energy,
development
- think out of the
box
- go wild!
- do not fearsome
provocation

blue hat (plan-hat)



- distance; control
- director
- manages the thinking process
- survey, synthesis, planning
- organisation: what do we need?

thinking hat questions

	emotion	What is my gut feeling about this?
	information	What are the facts?
	optimism	What are the benefits?
	provocation investigation	What are the possibilities, alternatives, new ideas?
	discernment pessimism	What are the reasons to be cautious?
	meta-cognition	Are we managing the process properly?









7 KEYS TO EFFECTIVE FEEDBACK

CHARACTERISTIC	OUTCOME
1) GOAL-REFERENCED	Learners know whether they are on track towards a goal or need to change course.
2) TANGIBLE & TRANSPARENT	Learners can understand exactly how your feedback relates to the task at hand.
3) ACTIONABLE	Learners know specifically what actions to take to move towards his/her goal.
4) USER-FRIENDLY	Learners find the feedback appropriate to his/her cognitive level.
5) TIMELY	Learners receive feedback while the example and effect are still fresh in his/her mind.
6) ONGOING	Learners have multiple opportunities to learn and improve towards the ultimate goal.
7) CONSISTENT	Learners can reflect his/her performance based on stable, accurate, and non-emotive feedback.



Five Steps (+1) for giving feedback

- Ask  Gain permission
- Observe  State what you saw
- Pause  Check for understanding
- Effect  The effect on you
- Suggest  Alternative effective behaviour
- + Discuss  Open a dialog (optional)



4 Niveaus en 3 vragen feedback



Cfr. Leren zichtbaar maken; John Hatti pp 150



Feed back
Resilience
Performance
Authenticity