The Higher-order Thinking Classroom

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Thinking

- de Bono writes “thinking is the operating skill with which intelligence acts upon experience for a purpose” and adds “‘*Thinking is the deliberate exploration of experience for a purpose.* That purpose may be understanding, decision-making, planning, problem-solving, judgement, action and so on.”

de Bono, E. (1991). *Teaching Thinking.* London: Penguin Books. p. 20, 33

What is Creative Thinking?

Creative Thinking – A novel way of seeing or doing things that is characterised by the following four components:

- Fluency – generating many ideas
- Flexibility – shifting perspectives easily
- Originality - generating new concepts and ideas
- Elaboration – building on other ideas

The Learning Process

Collect → Process → Apply

- At what point does thinking come in?

Useful verbs

- **Collecting** count, describe, match, name, recite, select, recall, tell, list
- **Processing** reason, compare, sort, contrast, solve, distinguish, explain, classify, analyse
- **Applying** evaluate, imagine, judge, predict, speculate, if/then, estimate, forecast

Why bother?

- Perhaps most importantly in today's information age, thinking skills are viewed as crucial for educated persons to cope with a rapidly changing world. Many educators believe that specific knowledge will not be as important in tomorrow's workers and citizens as the ability to learn and make sense of new information

Active vs. passive learners

- 1. understanding the subject matter;
- 2. being able to judge critically and think creatively;
- 3. rising to challenges in their everyday lives;
- 4. being responsible for their own learning;
- 5. being able to work and collaborate with others;
- 6. having self-esteem and self-confidence;
- 7. being able to communicate effectively.

Fostering a Creative Climate

- **Climate**

  A creative climate is one in which learners can become highly involved in experiences that provide rich soil for the growth of intuitions and concepts for dealing with thinking, learning, playing and so on.

Climate

- In a class that fosters a creative climate, learners learn to work in teams.

- They learn to compete with themselves – “next time I’ll try to do better than I did today” and not compete against each other.

Climate

- Pupils learn to value each other's contributions and develop speaking and listening skills.
- Knowing how to express their ideas verbally also helps them put their ideas more clearly on paper.

Explicit Instruction

- Define terms and objectives of the thinking lesson explicitly to help learners realise what is expected of them and what the process is about.
- Vary the learning content to meet different learning styles and different rates of learning.
- Provide opportunities for the learners to process the material.

The Metacognitive Process

- Metacognition is often simply defined as “thinking about thinking”.
- The teacher has to process the learning activity with her learners in order to facilitate metacognition. Other practices that the teacher can take up are:

Critical Reflection

- Give-and-take of informed discussion

- The task of fostering the give-and-take of informed discussion, which involves not only confidence and skill in expressing and defending one's own views but also a readiness to listen to those of others and to be prepared to reconsider and perhaps change one's initial stance. (Redfern, 1986: 93).

- When students are denied the possibility to develop personal initiative, they may easily become fearful of freedom, of personal power and responsibility. They become dependent on others.

Redfern, H. B. (1986). *Questions in aesthetic education.* London: Allen & Unwin.

Critical Reflection

- ‘the educational process must be one that cultivates reasoning and judgment’ pg 103. Lipman M (1991). Strengthening reasoning and judgment through philosophy. In S. Maclure, & P. Davies, (Eds.). *Learning to Think: Thinking to Learn*. Oxford: Pergamon Press.

- Co-construction of knowledge and content.

Reflective Thinking

- The processes of analyzing and making judgments about what has happened.
- Dewey (1933) suggests that reflective thinking is an active, persistent, and careful consideration of a belief or supposed form of knowledge, of the grounds that support that knowledge, and the further conclusions to which that knowledge leads.
- Learners are aware of and control their learning by actively participating in reflective thinking – assessing what they know, what they need to know, and how they bridge that gap – during learning situations.

http://www.hawaii.edu/intlrel/pols382/Reflective%20Thinking%20-%20UH/reflection.html

Creating a Culture that promotes reflective thinking

- Wait-time
- Emotionally supportive environments
- Prompt reviews of the learning situation
  - what do you know?, what don't you know?
- Authentic tasks
- Prompting students' reflection
- Provide some explanations
- Less-structured learning environment
- Social-learning environments

Questions that promote metacognition

- What am I being asked to do?
- Have I met this before?
- What information do I have?
- How much do I understand?
- What do I need to think about?
- How can I find this out?
- Do I need a plan?
- How can I check my progress?
- Why can’t I do this?
- Am I doing this correctly?
- Is there another way to do this?
- Would I do it differently next time?
- Did I work as well as I could?
- How did I learn what I learned?
- Could I use what I learned in another situation?
- Can I think of one?

Retention

- Learning is about retaining, remembering knowledge

Transfer

- Retention is not enough – students should be able to know how to use that knowledge beyond the classroom

Higher-order thinking

Towards a better understanding of the term

Higher Order Thinking

- Real meaning
- Active and intentional
- Deliberate use of thinking strategies.
- Social-construction
- Obsolescence

Making it happen

- You have to make thinking explicit so that thinking and metacognition is recognized in learning, achievement and success.
    - Practiced
    - Valued
    - Assessed

Metacognition

Thinking about your thinking

Metacognition in the classroom

- Focus of learning should be on the students' ability to become proactive about their learning.

- Think about ways how you can make this happen.

McGuinness et al. (2005). Metacognition in Primary Classrooms: A pro-ACTive learning effect for children McGuinness et al TLRP Annual Conference 2005 (Warwick).

Metacognition in the classroom

- Prior knowledge activation
  - “I try to figure out how new work fits with what I have learned before in this class”
- Self-monitoring
  - “I ask myself questions while I do my work to make sure I understand”
- Independence
  - “When we have difficult work to do in the class, I try to figure out the hard parts on my own”

McGuinness et al. (2005). Metacognition in Primary Classrooms: A pro-ACTive learning effect for children McGuinness et al TLRP Annual Conference 2005 (Warwick).

Metacognition in the classroom

- Self-monitoring
  - “I go back over work I don’t understand”
- Planning
  - “I spend some time thinking about how to do my work before I begin it”
- Evaluating
  - “When I make mistakes, I try to figure out why”

McGuinness et al. (2005). Metacognition in Primary Classrooms: A pro-ACTive learning effect for children McGuinness et al TLRP Annual Conference 2005 (Warwick).

Pro-active learning

- Active use of thinking strategies.
- Working harder.
- Putting in more effort.

- Research shows that to achieve pro-active learning, the process has to be sustained.
- Moderate to high ability range students benefit more than low ability children.

McGuinness et al. (2005). Metacognition in Primary Classrooms: A pro-ACTive learning effect for children McGuinness et al TLRP Annual Conference 2005 (Warwick).

Growth mind-set

- *A mental attitude that determines how you will interpret and respond to situations.* (http://wordnetweb.princeton.edu/perl/webwn?s=mindset)

- Carol Dweck, Stanford Univeristy.

- On praise and mindsets
  - Let's watch 

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Images of learners and learning

- **Passive images of learning in a knowledge-based curriculum** opposed to active images of learning
  - High expectations for quality thinking
  - Learners as capable
  - Learners as mindful and resourceful about their learning,
  - Joint meaning-making.
  - Increased awareness of the importance and value of teaching thinking, of being more open to alternative approaches and allowing children to be more independent in their learning.

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Direct teaching of thinking or infusion methodology

- In McGuinness et al.'s study, teachers created, designed and re-designed lessons and schemes of work from topics across-the-curriculum as opposed to pre-designed thinking lessons.

- Direct teaching of thinking launched in Maltese state schools in 1999.

McGuinness et al. (2005). Metacognition in Primary Classrooms: A pro-ACTive learning effect for children McGuinness et al TLRP Annual Conference 2005 (Warwick).

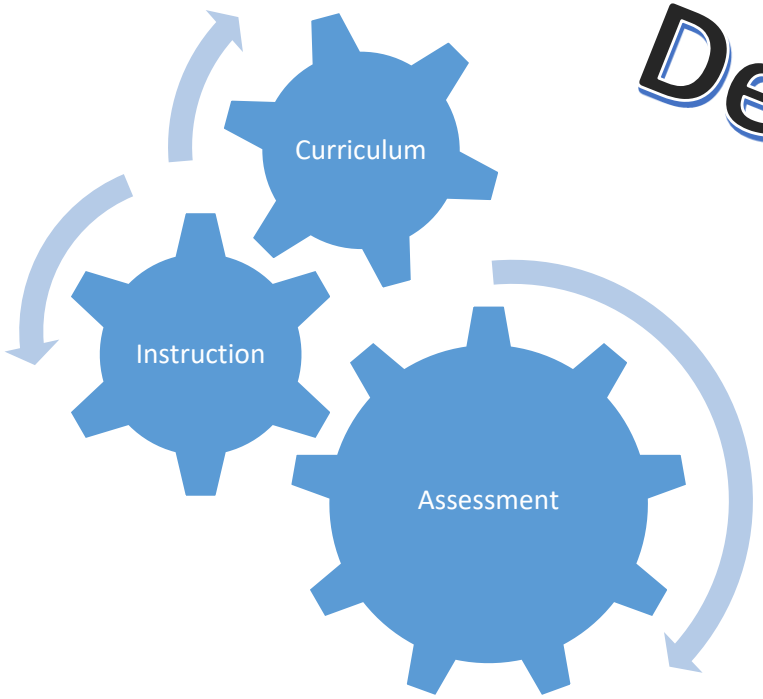
A renewed focus on assessment

- How do you assess students' work?
- At what stage of the learning does it happen?

A renewed focus on assessment

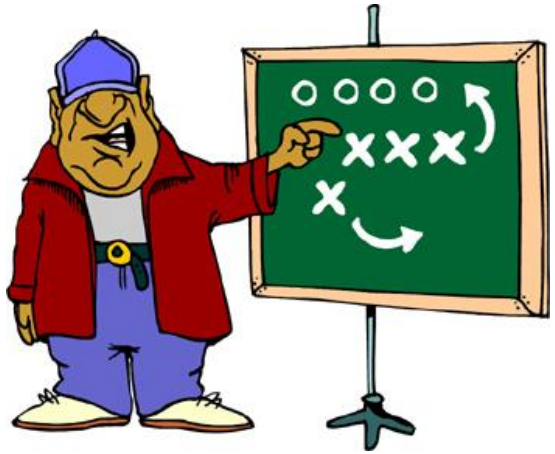
- Authentic assessment transfers ownership of the learning process from teacher to student.
- A multi-purpose assessment tool
- Assessment that focuses on process, product and growth, which incorporates such features as growth and development, reflection, goal setting and self-evaluation.

Authentic learning for lifelong learners



Deep understanding

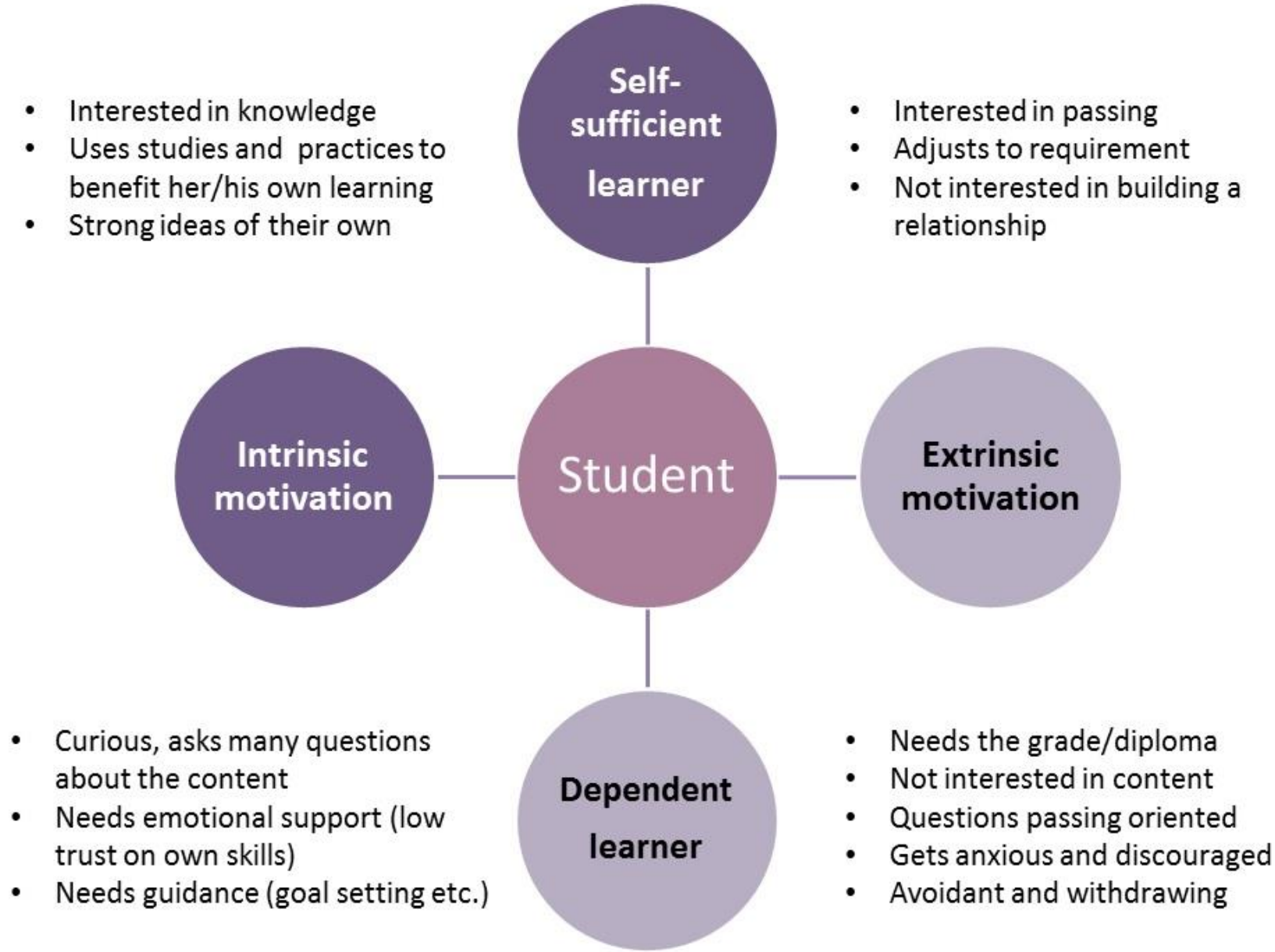
Self-awareness



Developing good thinking routines and reflective habits of mind

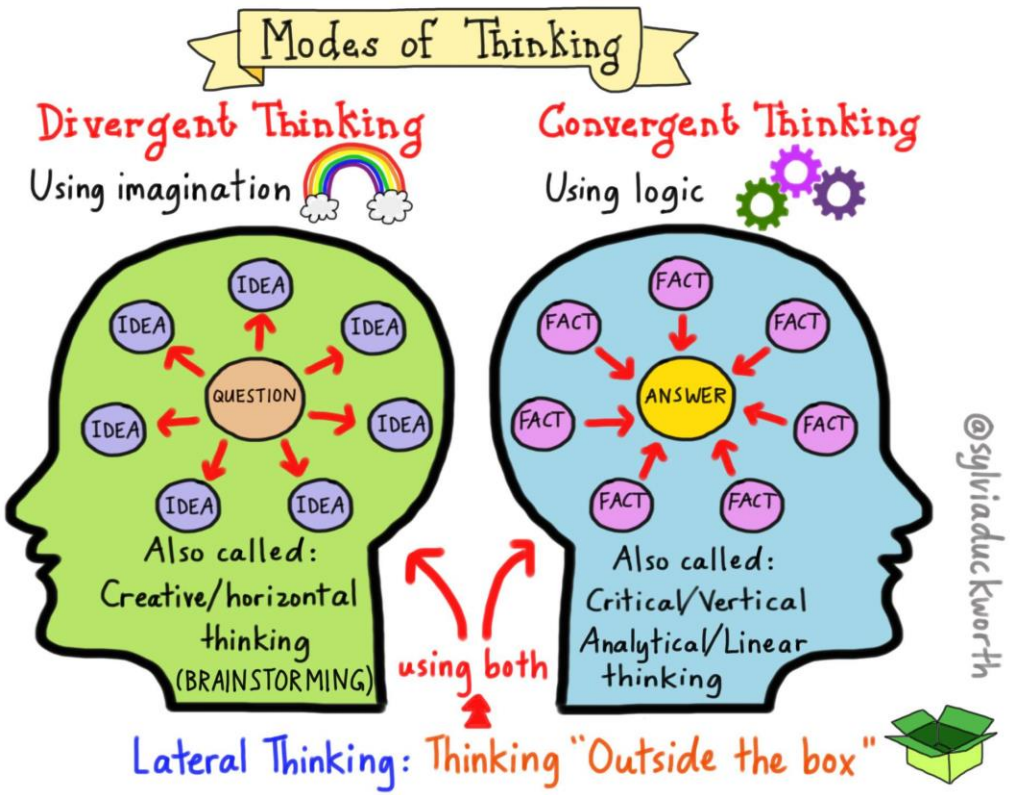
- Self Assessment
- Help students create their own knowledge and understandings, both independently and with others. As proponents of student-centered pedagogy, we should assume students should share responsibility for judging and revising what they know and what they do.
- Self-assessment results in an increase in students' tendencies to monitor and regulate their own thought processes, and to judge and improve the quality of their work.

A word on motivation

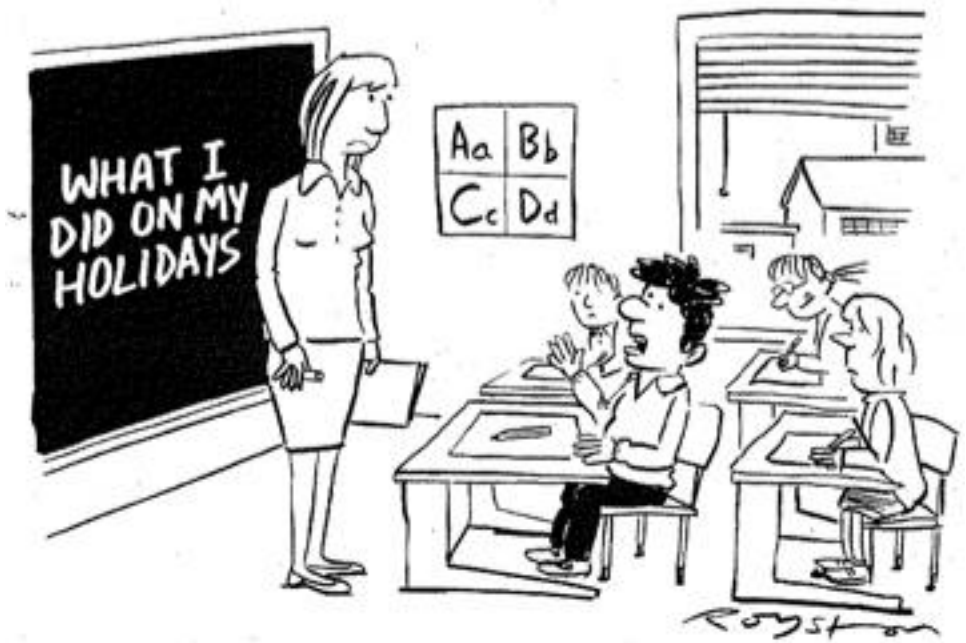


http://www.ninacsmith.com/3CLearning/Motivation/Intrinsicvs.Extrinsic.aspx

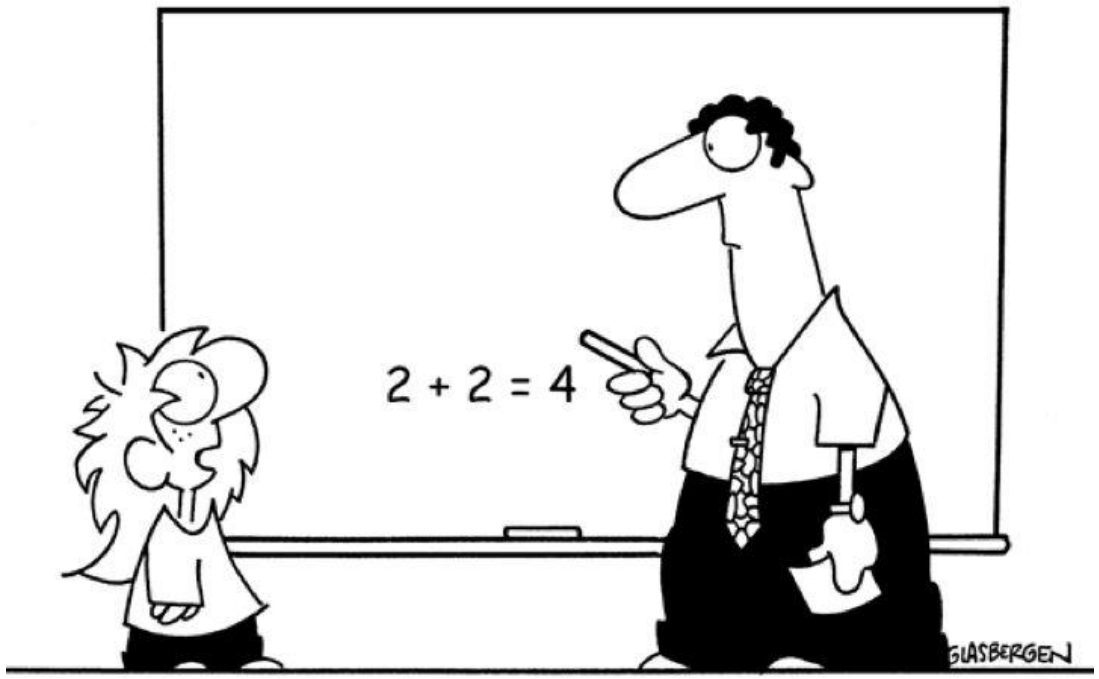
Different strategies in the classroom



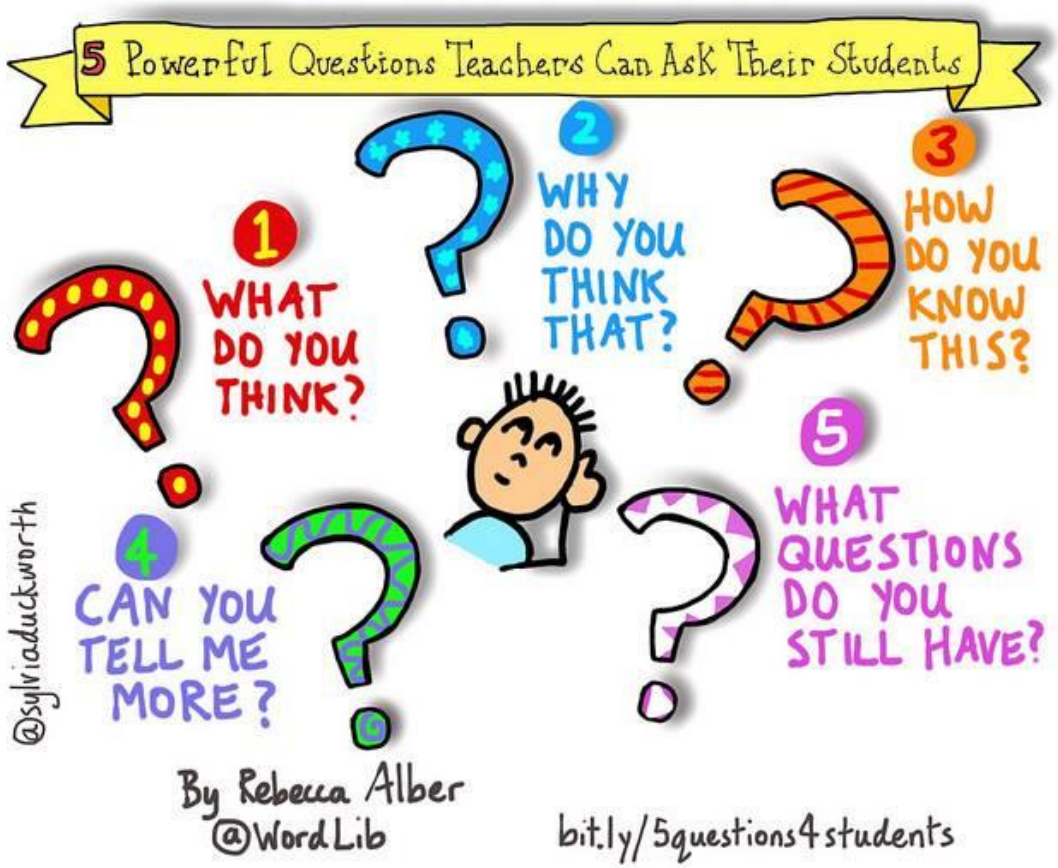
- Bloom's Taxonomy
- Edward de Bono's CoRT Programme
- Lateral Thinking
- Philosophical Inquiry



"Can't I just email you a link to my blog, miss?"



"How can I trust your information when you're using such outdated technology?"


5 Powerful Questions Teachers Can Ask Their Students
1
WHAT DO YOU THINK?
2
WHY DO YOU THINK THAT?
3
HOW DO YOU KNOW THIS?
4
CAN YOU TELL ME MORE?
5
WHAT QUESTIONS DO YOU STILL HAVE?
@sylviaduckworth
By Rebecca Alber
@WordLib
bit.ly/5questions4students

Conclusion