



Leading education
and social research
Institute of Education
University of London

Assessment and learning

Pulje 7

Oslo 13 May 2016

Gordon Stobart

Emeritus Professor of Education

Institute of Education, University of
London

g.stobart@ucl.ac.uk

The Big Picture

Thinking about learning

- What kind of learners do we want?

Assessment that supports good learning

- Making learning goals and standards clear – feed forward
- Giving feedback that works
- Encouraging self-regulated learners

How we learn

- What am I good at?
- *How and why did I get good?*
- How do I know I'm good?

- What am I *not* good at?
- How and why did I not get good?
- How do I know I'm not good?

Defining learning

‘A significant change in capability or understanding’

This excludes: the acquisition of further information when it does not contribute to such changes.

(Michael Eraut)

‘Any process that...leads to permanent capacity change’

this involves *content, incentive* and *interaction*

(Knut Illeris)

‘It’s like learning to ride a bike’

Developing expertise

Nobody is born an expert: 'Child prodigies do not have unusual genes; they have unusual upbringings' (Matthew Syed)

Expertise is the result of:

1. *Opportunities* (time, place, people – eg Bill Gates)
2. *High expectations, motivation and clear goals*
3. *Deliberate practice* (10K hours)
 - Designed to improve
 - Repeated until automatic
 - Continuous feedback
 - Demanding mentally
 - Involves risks and is hard work (eg Marie Curie)
4. *Deepening knowledge*
 - Development of a mental model/framework
 - Recognising what's relevant and irrelevant
 - Remembering more – 'chunking'

High expectations are the key to improving learning – expert teachers set more demanding work (John Hattie, 2012)

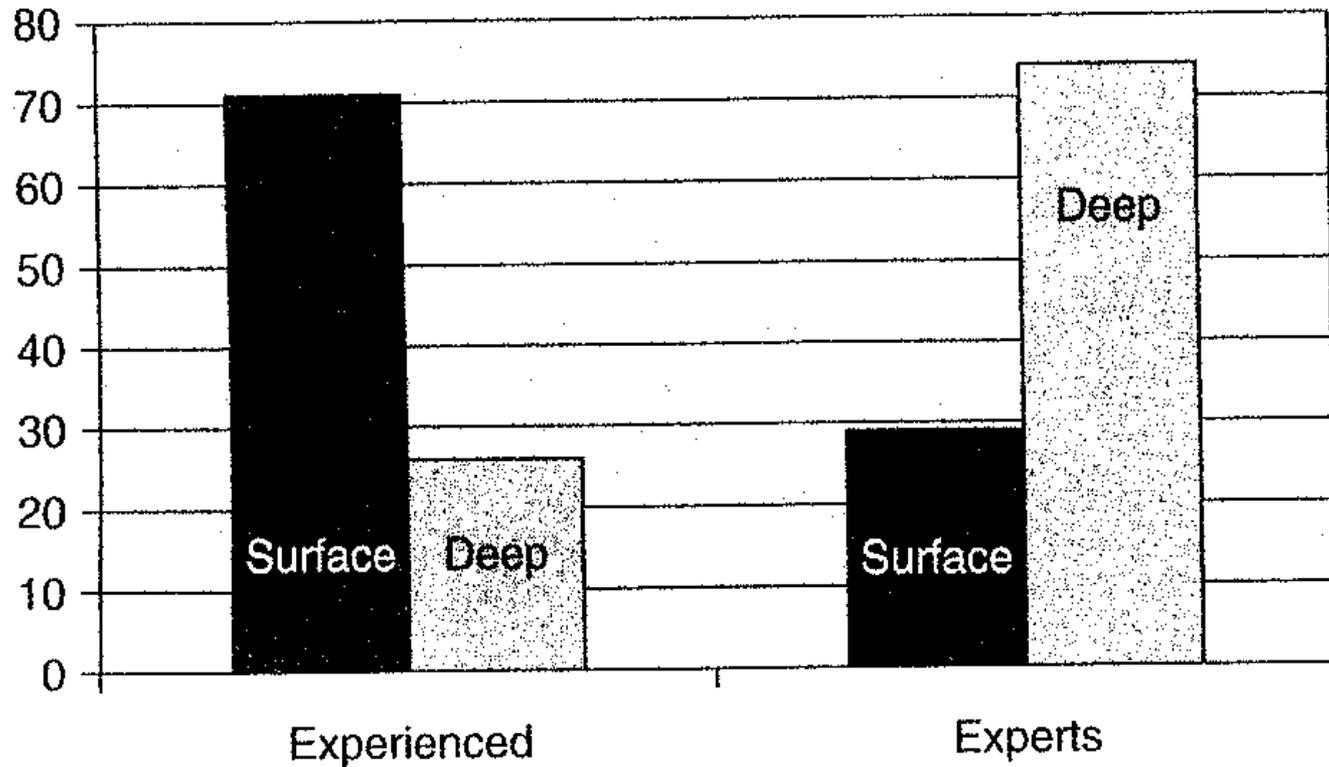


FIGURE 3.2 Percentage of student work classified as surface or deep learning

The importance of student motivation

‘The chief impediments to learning are not cognitive. It is not that students cannot learn; it is that they do not wish to.’
Mihalyi Csikszentmihalyi

In his *Talented Teenagers* study he found that students were most motivated when their teachers :

- were personally involved in the subject and communicated this passion
- centred attention on challenges and the satisfaction of learning something new
- provided informative activity- focused feedback
- had a flexible and dynamic attentional style that sought to match skills to challenges
- allowed students freedom and autonomy to develop their own solutions and approaches

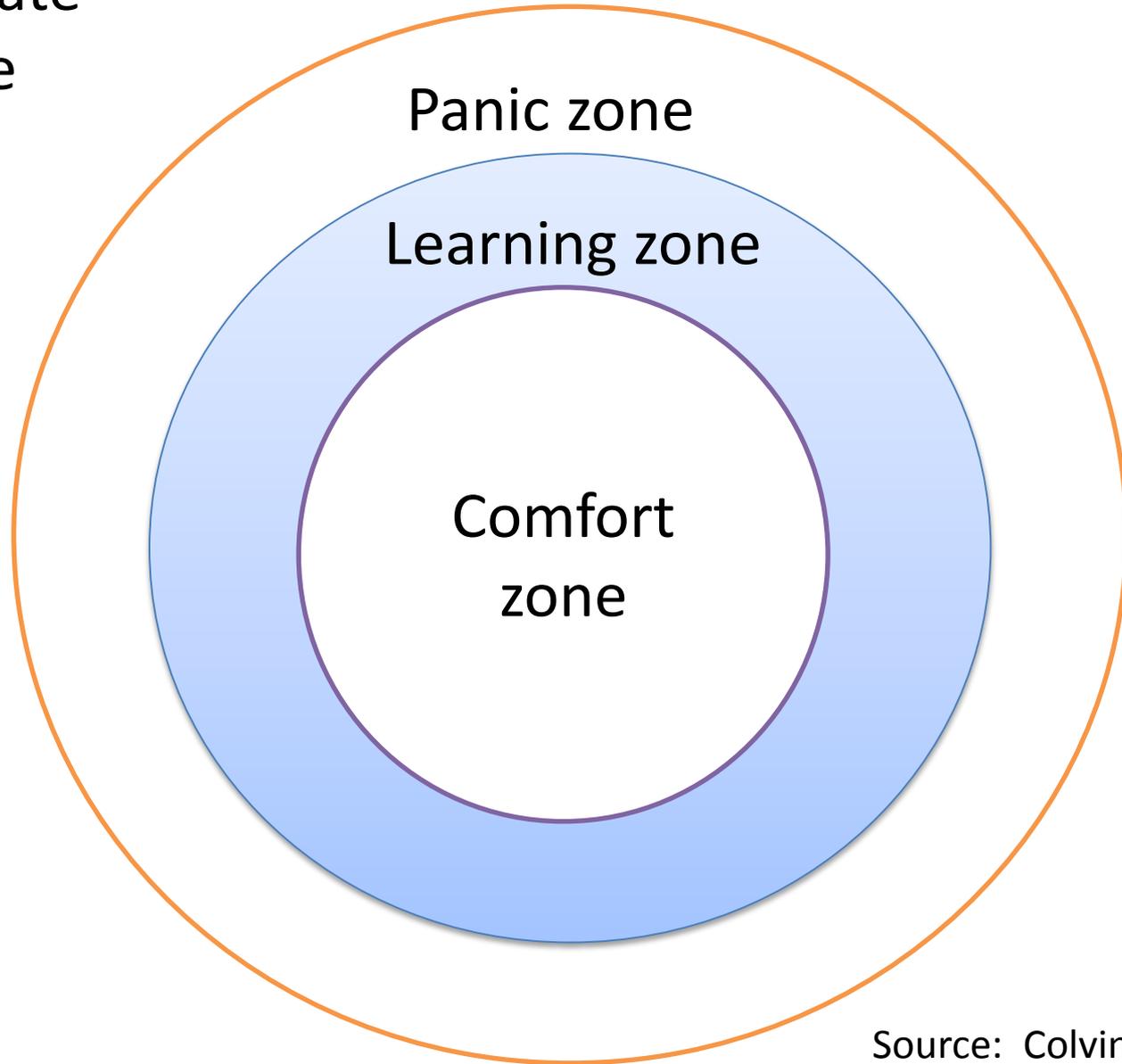
Developing expertise

Nobody is born an expert: 'Child prodigies do not have unusual genes; they have unusual upbringings' (Matthew Syed)

Expertise is the result of:

1. *Opportunities* (time, place, people – eg Bill Gates)
2. *High expectations, motivation and clear goals*
3. *Deliberate practice* (10K hours)
 - Designed to improve
 - Repeated until automatic
 - Continuous feedback
 - Demanding mentally
 - Involves risks and is hard work (eg Marie Curie)
4. *Deepening knowledge*
 - Development of a mental model/framework
 - Recognising what's relevant and irrelevant
 - Remembering more – 'chunking'

Deliberate
practice



Source: Colvin, 2009

Developing expertise

Nobody is born an expert: 'Child prodigies do not have unusual genes; they have unusual upbringings' (Matthew Syed)

Expertise is the result of:

1. *Opportunities* (time, place, people – eg Bill Gates)
2. *High expectations, motivation and clear goals*
3. *Deliberate practice* (10K hours)
 - Designed to improve
 - Repeated until automatic
 - Continuous feedback
 - Demanding mentally
 - Involves risks and is hard work (eg Marie Curie)
4. *Deepening knowledge*
 - Development of a mental model/framework
 - Recognising what's relevant and irrelevant
 - Remembering more – 'chunking'

Mental models

■ 1.	<input type="checkbox"/>
■ 2.	<input type="checkbox"/>
■ 3.	<input type="checkbox"/>
■ 4.	<input type="checkbox"/>
■ 5.	<input type="checkbox"/>
■ 6.	<input type="checkbox"/>
■ 7.	<input type="checkbox"/>
■ 8.	<input type="checkbox"/>
■ 9.	<input type="checkbox"/>

Working memory

Write 18725 as code

Mental models

Recognising patterns

1	2	3
4	5	6
7	8	9

Everyday expertise at 'chunking'

- wmroanshtehyrtlrl
- norwayisthehomeoftrolls

- 938473652830
- 191420121939

What are the messages for schools?

John Hattie's priorities for effective teaching and learning

Transparent goals

- the more transparent the teacher makes the learning goals, then the more likely the student is to engage in the work needed to meet the goal.

Success criteria

- the more the student is aware of the criteria of success, then the more the student can see the specific actions that are needed to attain these criteria

Rapid formative feedback

- the more there is feedback about progress from prior to desired outcomes the more positive attributes to learning are developed

Assessment for Learning

Assessment for Learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there.

Assessment Reform Group (2002)

Quality AfL keeps learning principles central – *the spirit* – ‘high organisation based on ideas’ in contrast to *the letter* when practices are used without understanding.

An alternative classification: *routine vs adaptive expertise*

Where learners need to go:

Learning intentions & success criteria

1. High expectations are the key to improving learning
2. The teacher is clear about what is being learned (progression in learning) – and makes it clear to the student.
3. What we will be *learning* rather than what we will be *doing*
4. The importance of '*tuning in*' (building on 'where learners are in their learning'):

2. The importance of being clear about what and why we are learning – and making deep demands

The need to ‘make sense’ and ‘make meaning’

- It’s not that I haven’t learned much. It’s just that I don’t understand what I’m doing’ (15 yr old)
- Sir treats us like we’re babies, puts us down, makes us copy stuff off the board, puts up all the answers like we don’t know anything. And we’re not going to learn from that, ‘cause we’ve got to think for ourselves.
(low achieving student)
- We knew how to do it. But we didn’t know why we were doing it and we didn’t know how we got around to doing it.....I can get the answer, I just don’t understand why .
(maths student)

(source: Jo Boaler)

Separating the learning from the task

Doing this makes it easier to differentiate instruction without creating a classroom in which different students are working towards different goals.

All students are working towards the same learning intention; the differentiation comes in the success criteria – how far are students able to transfer their learning?

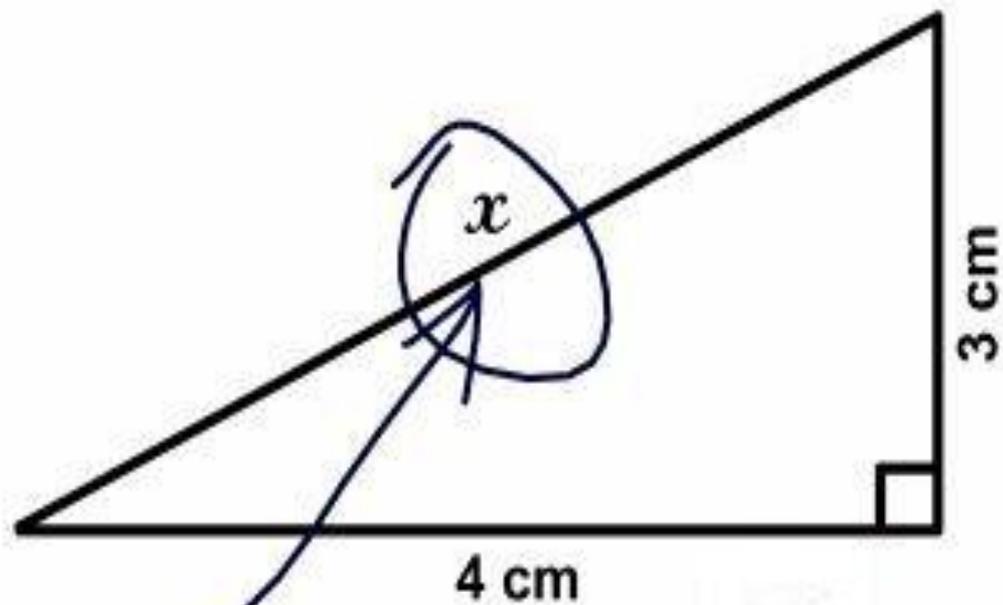
All students should be able to transfer what they have learned to very similar contexts while others can be challenged by assessing how far they can transfer what they have learned.

(Dylan Wiliam)

Tuning in: Dinosaurs



3. Find x .



Here it is

PETER

1.21

4c) Expand

~~$a^3 + 3a^2b - 2$~~

$$(a+b)^n$$

Very young Peter

$$= (a + b)^n$$

2 ?
/

$$= (a + b)^n$$

$$= (a + b)^n$$

~~?~~

etc...

Tuning in – what kind of maths problem is this?

A woman is on a diet. She buys 3 turkey slices which weigh $\frac{1}{3}$ of a pound (0.45 of a kilo) but her diet only lets her eat $\frac{1}{4}$ of a pound.

How much of the 3 slices she bought can she eat if she stays on her diet?

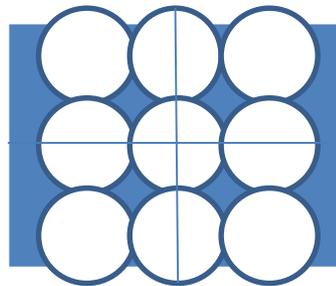
Some solutions

1. $3 \text{ slices} = \frac{1}{3}$; $x \text{ slices} = \frac{1}{4}$

cross –multiply so that $\frac{1}{3} x = \frac{3}{4}$, so $x = \frac{9}{4}$

2. If 3 slices is a third of a pound then 9 slices is a pound. I can eat $\frac{1}{4}$ of a pound so $\frac{1}{4}$ of 9 slices is $\frac{9}{4}$ slices (Grade 5)

3.



(Source: Jo Boaler)

Success criteria – understanding what is needed

Royce Sadler's paradox: why does thoughtful feedback often not work?

Success criteria need:

1. Negotiation: 'what would you expect to see in a successful piece of work?'
2. Exemplars: 'which of these two (or more) pieces of work best meets the criteria?'
3. Modelling: 'Here's what I mean...'
4. Guided practice: activity > independent practice (6x)

The greatest enemy of understanding is coverage. As long as you are determined to cover everything, you actually ensure that most kids are not going to understand. You've got to take enough time to get kids deeply involved in something so they can think about it in lots of different ways and apply it—not just at school but at home and on the street and so on.

(Howard Gardner)

Brainstorming

Look up and look at your audience

Have to be able to hear you

No fidgeting

Look interested

Use small cards for notes

Make it interesting by using pictures or diagrams

Use lots of expression

Slow down

Stand straight

Keep it short

Use specific examples to get your point across

Make sure you have a conclusion

We need to know what your topic is right away

Sort and categorise

Sorting into major criteria: S= speech and manner; I = interesting to audience; E = easy to follow

S Look up and look at your audience

S Have to be able to hear you

S No fidgeting

I Look interested

E Use small cards for notes

I Make it interesting by using pictures or diagrams

S Use lots of expression

E Slow down

S Stand straight

I Keep it short

E Use specific examples to get your point across

E Make sure you have a conclusion

E We need to know what your topic is right away

Make and post a chart

Criteria for oral presentation	Details/specifics
Interesting to an audience	<p>Look interested</p> <p>Make it interesting by using pictures or diagrams</p> <p>Keep it short</p>
Easy to follow	<p>Use small cards for notes</p> <p>Slow down</p> <p>Use specific examples to get your point across</p> <p>Make sure you have a conclusion</p> <p>We need to know what your topic is right away</p>
Speech and manner help the audience listen	<p>Look up and look at your audience</p> <p>Have to be able to hear you</p> <p>No fidgeting</p> <p>Use lots of expression</p> <p>Stand straight</p>

Modelling – Why do we watch cookery programmes?

Making bread:

Measure three cups of flour

Pour three tablespoons of warm water in a large bowl

Proof the yeast

Knead the dough – but stop before it is tough and elastic

Let the dough sit & rise then punch it down

.....

AfL in practice: teaching Sudoku

Sudoku

Fill the grid so that each row, column and 3x3 box contains the numbers 1-9

			4	1	6			
		5				3	4	
	7							9
	6				3			5
		8				6		
2			1				9	
1							2	
	3	4				7		
			3	7	9			

Feedback

‘Provides **information** which allows the learner to close the gap between current and desired performance’

It is most effective when:

- It is effectively timed;
- It is specific and clear;
- It is clearly linked to the learning intention;
- The learner understands the success criteria/standard;
- It focuses on the **task** rather than the learner (self/ego);
- It gives cues at the right levels on how to bridge the gap;
- It offers **strategies** rather than solutions;
- It **challenges**, requires **action**, and is **achievable**.

Specific and well timed....

Negative feedback as a 'thorn'

- 'write more' – 'If I knew more I would have written it – I don't know what more to write. Teachers should tell me what is missing' (14 yr old Norwegian pupil)
- When pupils are not given time to act on the feedback they see it as negative and critical which makes them feel 'useless'. If they are given time and the teacher follows up on the feedback it is treated as positive.

(Gamlem and Smith)

'is specific and clear'....

The thermochromic ink in this changes colour from the temperature from your forehead. It tells you if you are too hot.

Continue to improve handwriting and spelling

Explain the science

Feedback – written comments

These were the total comments over 6 months in one subject for a 12 year old:

Read carefully / Finish, colour / Good / Back of book / Read / Quite good / Why? Explain / Study diagram / Very poor / Keep trying harder / Please try harder to improve spelling and neatness / If you need help, ask / Concentrate 100% - check words / Please listen to instructions. You should have copied out sentences / Mixed. Some understandings, decent spelling but the book asked you to explain

How informative is feedback if we can't even tell what subject it is?

It is clearly linked to the learning intention; the learner understands the success criteria/standard;

Year 7 home Learning Task 1

The answer is 20!

(What is the question?!?)

- Make up some maths questions that give an answer of 20.
- You can start simple, for example
 $13 + 7 = 20$
- Then you can be more imaginative:
 $25\% \text{ of } 80 = 20$
- Be as creative as you can.
- You should come up with at least 20 questions but there is no upper limit.
- Credits and prizes will be awarded to the best, most creative questions!!

GOOD LUCK AND ENJOY!

20 ways to make 20 – be creative (first maths homework in secondary school)

1. HW 15/09/10

1. $100 - 80 = 20$
2. $53 - 33 = 20$
3. $5 \times 2 - 10 = 20$
4. $19 \times 2 - 18 \times 20$
5. $75 - 55 = 20$
6. $20 \times 5 - 80 = 20$
7. $5 \times 5 - 5 = 20$
8. $10 \times 4 - 20 = 20$
9. $200 \div 10 = 20$
10. $34 - 14 = 20$
11. 2×10
12. $16 \div 4 = 20$
13. $2 \times 4 + 3 \times 4 = 20$
14. $15 + 5 = 20$
15. $2 \times 2 + 2 = 20$
16. $30 \div 2 - 5 = 20$
17. $17 + 3 = 20$
18. $8 - 9 + 11 = 20$
19. $18 \times 20 = 20$
20. $100 - 980 = 20$
21. $52 - 50 \times 10$

Very good use of
all 4 operations
What about using
decimals, fractions or
negative numbers??
(challenge)

Effective feedback: Task & effort-related

- It focuses on the TASK rather than the learner (self/ego);
- It gives cues at appropriate levels on how to bridge the gap: the task/process/self-regulation loop

Task level: get more/correct information (*'check the facts about...'*) – 'corrective feedback' - best on simple tasks

Process level: improving processing of information or learning processes – checking for error, evaluating information

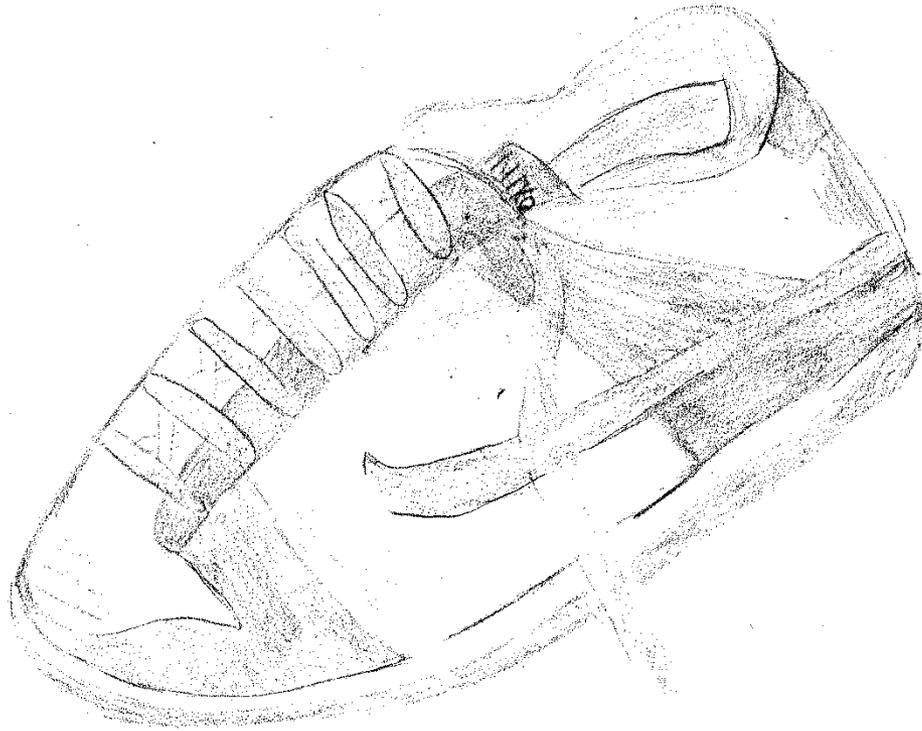
(*'how could this argument be strengthened?'; 'Can you think of a more dramatic ending?'*)

Self-regulation level: creating internal feedback & self-assessment

(*'have you used what you know about writing up an experiment? What would your own judgement be?'*)

H/W

My Trainer

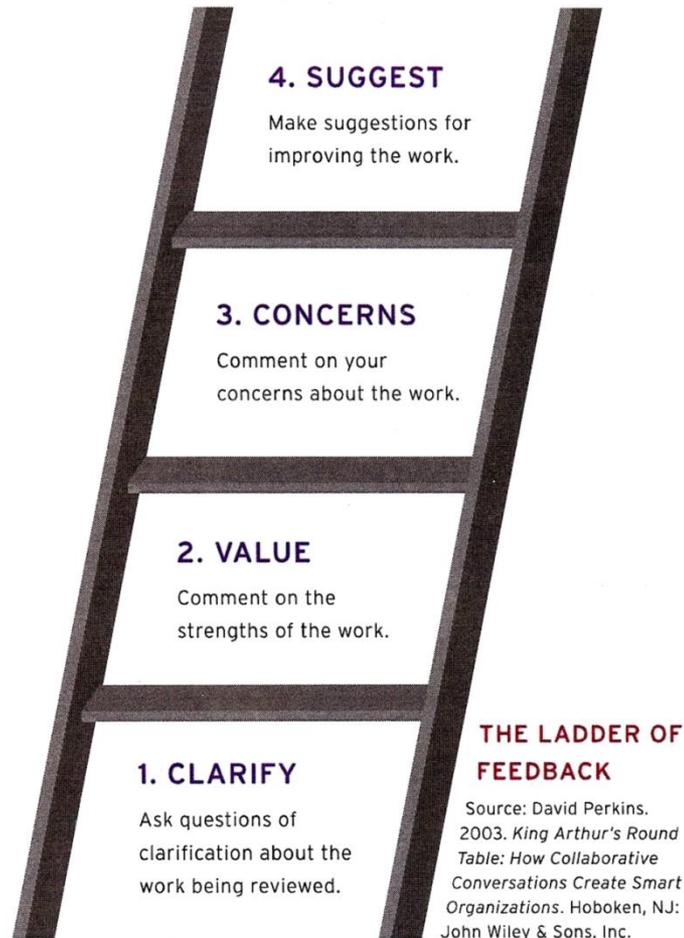
Credit ✓

© This is a sensitive, well planned drawing, your lines are light and you have observed very carefully. To develop draw a little larger which will also assist with achieving a more accurate shape.



lovely drawing
-big and bold.
keep pencil really
sharp so edges are
hard and crisp.

The ladder of feedback



How can we encourage self-regulated learning?

1. **Create favourable learning environments:** ‘safe to take risks’, high expectations, ‘personal bests’
2. **Make the learning meaningful:** relevance, ‘tuning in’
3. **Help learners be clear about goals of learning** – ‘know where they’re going’ – making sense
4. **Show learners they can manage the learning** – ‘sweet spot’; zone of proximal development (zpd), don’t ‘over-help’
5. **Encourage positive motivation and emotions** - learning under control (effort and strategies), source of pleasure and pride
6. **Help learners cope with negative emotions** – coping strategies, reduce performance anxiety or boredom, modelling, reduce arousal (source: Boekaerts)