



Challenge and Cognition: Increasing the level of challenge in the teenage classroom



Encourage learners to choose
the level of challenge

Reflect on our use of questioning to
encourage Higher Order Thinking Skills

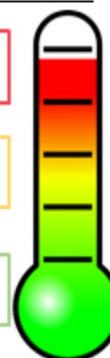
Understand the difference between
mastery and developmental tasks

Confidence thermometer

I could teach this
to someone else

I have
completed this.

I need a bit of
help with this.



Your flight path



The Jabberwock



Artist: Michael Kutsche

From: The Jabberwocky by Lewis Carroll (1871)



The Jabberwock



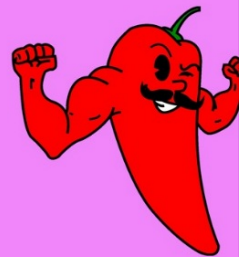
Where does it live?

What does it eat?



How does it move?

How does it sound?





'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

1. What were the slithy toves doing in the wabe?
2. How would you describe the state of the borogoves?
3. What can you say about the mome raths?



'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

terrified



4. Were the borogoves right to feel mimsy? If so, why? If not, why not?
5. How effective was the mome raths' strategy?

spoon



fork

emotion



icon

hungry



angry

giant



enormous

jeans



leggings

motor



hotel

chill



relax

Line 1	chillax	spork	hangry	ginormous
Line 2	motel	chillax	emoticon	jeggings
Line 3	ginormous	emoticon	jeggings	motel
Line 4	hangry	spork	emoticon	jeggings





'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

What happens next?



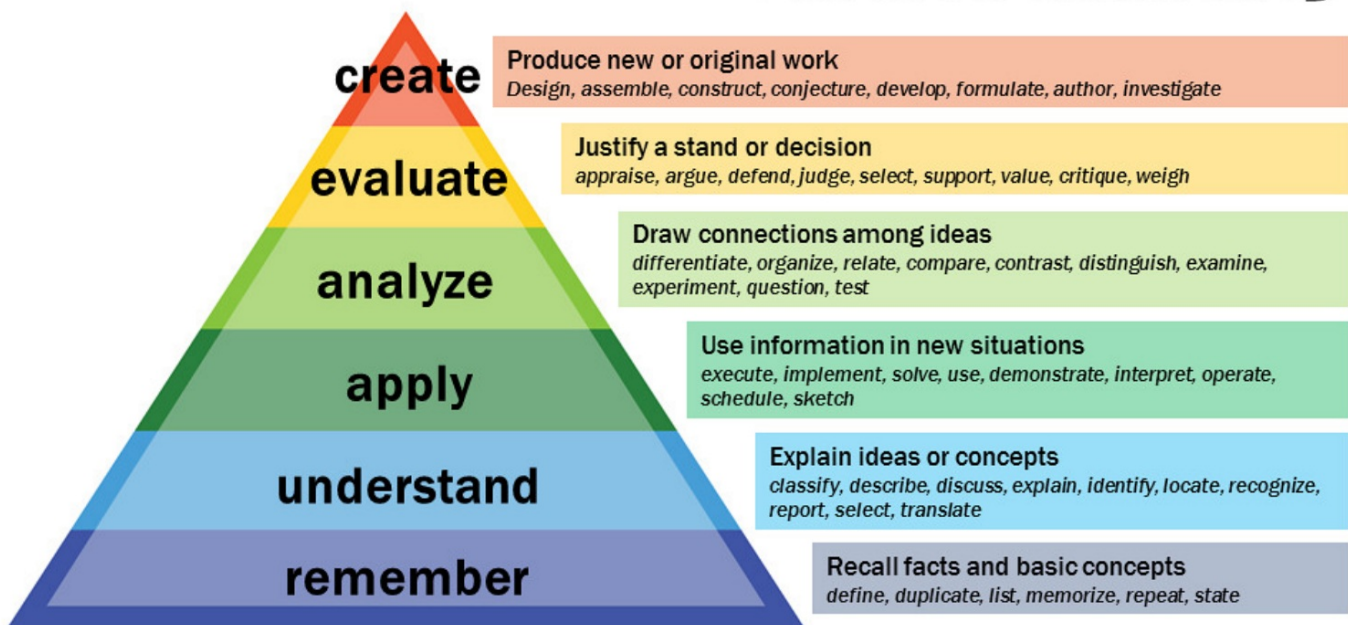
6. Work with your group. Complete your verse only with new words (either from the previous exercise or from your imagination).

Group 1	"Beware the Jabberwock, my son! The jaws that _____, the claws that catch! Beware the _____ bird, and shun The _____ Bandersnatch!"
Group 2	He took his _____ sword in <u>hand</u> ; Long time the _____ foe he sought— So rested he by the _____ tree And stood awhile in thought.
Group 3	And, as in uffish thought he stood, The Jabberwock, with eyes of flame, Came _____ through the _____ wood, And burred as it came!
Group 4	One, two! One, two! And through and through The vorpal blade went snicker-snack! He left it dead, and with its head He went _____ back.
Group 5	"And have you killed the Jabberwock? Come to my arms, my _____ boy! O frabjous day! Callooh! Callay!" He chortled in his joy.



2001

Bloom's Taxonomy



Taken from: [Bloom's Taxonomy | Center for Teaching | Vanderbilt University](#)



Mastery and developmental tasks

A **mix** of developmental and mastery tasks ensures that all students achieve some success while the more able are stretched. We need both types of task in all lessons and all academic levels.



**Developmental
tasks**

Mastery tasks



Developmental tasks

not all students will be able to achieve the task fully
they are more difficult

they are often dependent on prior learning

involve higher-order thinking skills

Mastery tasks

they are fairly easy, involving knowledge and comprehension

are usually part of our scaffolding

involve lower-order thinking skills

all students should be able to find the answers

they can be achieved in a short time

they are not dependent on prior learning

What Claire (as a student) did	Mastery or developmental task?	What level on Bloom's Taxonomy?	Which verb(s)?
1. Describe what they see in the photo	Mastery	Understand (LOTS)	Describe
2. Chilli challenge: choose a question to answer about the Jabberwock	Mastery	Understand (LOTS) Apply (LOTS)	Describe (where does it live? – visible from picture) Describe (what does it eat?) Interpret (how does it move?) Demonstrate (how does it sound?)
3. Answer 3 initial questions about verse 1	Mastery	Apply (LOTS)	Interpret
4. Replace 4 words from the first verse with English words.	Mastery	Apply (LOTS)	Interpret
5. Answer 2 more questions about the first verse	Developmental	Evaluate (HOTS)	Appraise
6. Play bingo with portmanteau words.	Mastery	Understand (LOTS)	Identify
7. Guess what happens next in the poem.	Developmental	Create (HOTS)	Conjecture
8. Complete the verse with their own words in groups to finish the poem.	Developmental	Create (HOTS)	Design/develop
9. Work with a new group and share their verse. Their new partners try to guess what the added words mean.	Developmental	Evaluate (HOTS)	Appraise



1. Was there a point in the lesson where the students chose the level of challenge for themselves?
2. Was there a point in the lesson where the teacher chose the level of challenge for the students?



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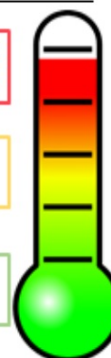
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Your flight path



Procedural



Remembering



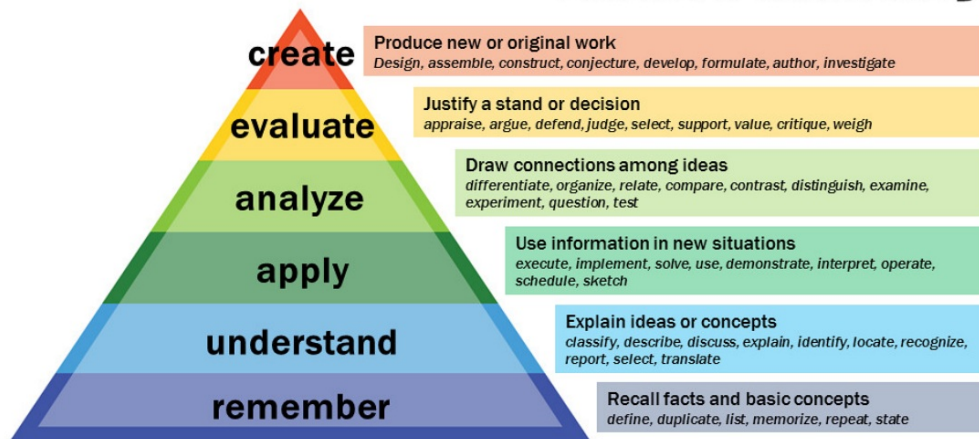
Thinking



- a. How many minutes do you have for this?
- b. What's your take on the ending of *The Jabberwocky*?
- c. When did Amelia Earhart start flying?
- d. Why is it important to be kind?
- e. What's the past tense of *bring*?
- f. Are you working alone or with a partner?
- g. Who is this song written for, do you think?
- h. Did you bring your pencil case?
- i. How many Olympian Gods are there?



Bloom's Taxonomy



Procedural

- a. How many minutes do you have for this?
- f. Are you working alone or with a partner?
- h. Did you bring your pencil case?

**Remember/
understand**

Remembering

- c. When did Amelia Earhart start flying?
- e. What's the past tense of *bring*?
- i. How many Olympian Gods are there?

**Remember/
understand**

Thinking

- b. What's your take on the ending of The Jabberwocky?
- d. Why is it important to be kind?
- g. Who is this song written for, do you think?

**Analyse/
evaluate**

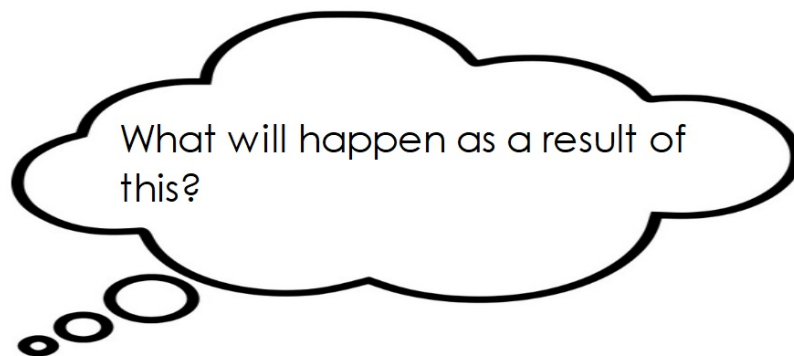


In classroom observations, we analysed the types of questions that teachers (and students) mostly asked.

60% encouraged students to remember.

20% were procedural.

20% encouraged thinking.





How to encourage a culture of inquiry





Questioning

It's important to plan the type of question we ask and when to ask it!



Assessing students' learning

Closed/
rapid fire
Remembering

Hinge
questions
Understanding

Thinking
questions



Progressing students' learning

Adapted from: @kenradical www.radicalhistory.co.uk



Hinge questions

- Usually multiple choice
- Checks understanding for all students
- Students should reveal answers at the same time
- The teacher needs to set a 'pass rate'
- Any incorrect answers need to be explored
- A good opportunity for peer teaching

Hinge questions are used:

- A. to help the teacher explain something**
- B. to assess overall understanding of a concept**
- C. to inform progress reports**
- D. to grade students**





Thinking or Socratic questions



Can you give me an example?

What problem are you trying to solve?

What would happen if....?

What evidence is there that supports....?

Who would be affected and what would they think?

What does our experience tell us will happen?

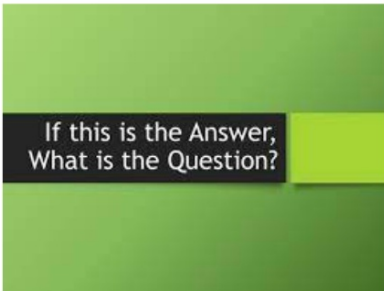
Why do you think I asked that question?



Implement a 'no hands' policy



Allow at least 3 seconds thinking time

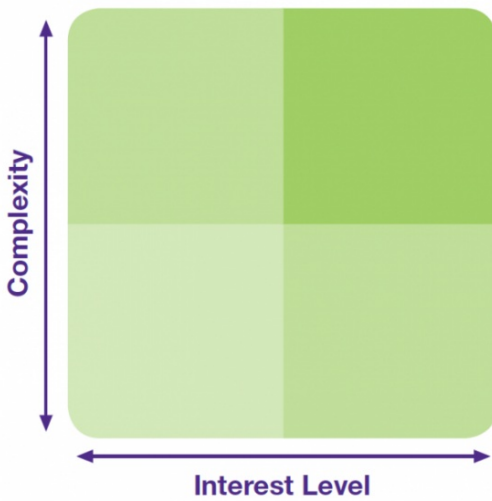


Flip it - give students the answer and ask them to provide the question





Introduce a wall of wonder



Introduce a question continuum



Encouraging **different interaction patterns** when questioning other than T-Ss and Ss-T.



Pose - pause - pounce - bounce
(PPPB it)



Agree, build on, challenge
ABC it!

Giving an opinion

I think/reckon that...

I believe that....

In my view.....

Agreeing

I agree with because

I'd argue the same thing because....

The reason I agree with.... is.....

That's an interesting point because....

Building

Building on what said.....

I'd also add that.....

I'd like to build on 's point of view and say that.....

Challenging

I'd like to challenge this view because...

My own view is different because...

I'd have to disagree because....



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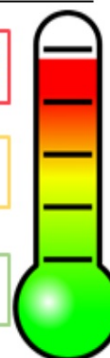
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Your flight path

Encouraging learner choice and reflection on that choice



A chilli challenge

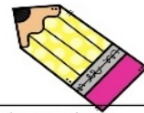


Was the challenge spicy enough?



A choice board

<h1>Reading Choice Board</h1>			
Write a poem about one major event so far in the story.	Make a poster using PowerPoint (or hand drawn/coloured) to summarize what has happened in the story so far.	Record at least 5 vocabulary words that you found interesting. Find the definitions of these words. Why did you find these words interesting?	Choose a character. Imagine you walked into their house. What would they have in there and why?
Suggest a solution to a problem that occurred in the text. Why do you suggest this as a solution?	Write a prediction for what you think will happen later on in the book. Why do you think this?	Design 2 slides on PowerPoint that show the sequence of events in the story so far.	Choose a character and pack a suitcase for them for a trip. What would you find in the suitcase and why?
Demonstrate understanding of the plot of the story. You can demonstrate your understanding any way you wish (paragraphs, jot points, a visual).	Make 3 connections to the story, including a connection to your life, to another book you have read, and to the real world.	Write a summary of the book or chapter that you read so far.	Write about your favourite part of the book so far. Why is this your favourite part? Are there connections you can make?



From: Jessica Fernandes



MENU CONTRACT

“Probability”

Due: _____

All items in the main dish and the specified number of side dishes must be complete by the due date. You may select among the side dishes and you may decide to do some of the desserts items, as well.



Main Dishes

- 1 Complete the “meteorology simulation” on p. 88-89 of your textbook.
- 2 Create a list of 10 pairs of events. 5 pairs should contain events that are *dependent*; 5 pairs should contain events that are *independent*. Explain each classification.
- 3 Complete the “frequency table” assignment on p. 506-507 of your textbook.
- 4 Examine the attached list of functions and determine which functions represent probability distributions.



Side Dishes (Select 2)

- 1 Work with a partner to analyze the game of “Primarily Odd.” See your teacher for game cubes and further instructions.
- 2 Design a “game spinner” that has this probability distribution: $P(\text{red})=0.1$; $P(\text{green})=0.2$; $P(\text{blue})=0.3$; $P(\text{yellow})=0.4$.
- 3 Suppose a dart lands on a dartboard made up of four concentric circles. For the center of the board (the “bull’s eye”), $r=1.5$; the remaining rings have widths of 1.5. Use your understanding of area and probability to determine the probability of 1) hitting a “bull’s eye” and 2) landing in the outermost ring.



Desserts (Select 1)

- 1 Figure the probability of “Murphy’s Law” and make a case for whether or not it should indeed be a “law.”
- 2 Use a frequency table to chart the colors that your classmates wear for a week. Then, use probability to predict how many students will wear a certain color on a given day.

A menu choice

Are you satisfied with your order?



Thank you very much for attending our webinar!

If you want to get in touch, you can find us at team@eltonix.com or join our Facebook group, [eltonix connects](#).