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

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 borogroves?
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.

4. Were the borogroves right to feel mimsy? If so, why? If not, why not?

5. How effective was the mome raths' strategy?
'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).

<table>
<thead>
<tr>
<th>Group 1</th>
<th>“Beware the Jabberwock, my son! The jaws that ________, the claws that catch! Beware the ________ bird, and shun The ________ Bandersnatch!”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 2</td>
<td>He took his ________ sword in hand; Long time the ________ foe he sought— So rested he by the ________ tree And stood awhile in thought.</td>
</tr>
<tr>
<td>Group 3</td>
<td>And, as in uffish thought he stood, The Jabberwock, with eyes of flame, Came ________ through the ________ wood, And burbled as it came!</td>
</tr>
<tr>
<td>Group 4</td>
<td>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.</td>
</tr>
<tr>
<td>Group 5</td>
<td>“And have you killed the Jabberwock? Come to my arms, my ________ boy! O frabjous day! Callooh! Callay!” He chortled in his joy.</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>What Claire (as a student) did</th>
<th>Mastery or developmental task?</th>
<th>What level on Bloom’s Taxonomy?</th>
<th>Which verb(s)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe what they see in the photo</td>
<td>Mastery</td>
<td>Understand (LOTs)</td>
<td>Describe</td>
</tr>
<tr>
<td>2. Chilli challenge: choose a question to answer about the Jabberwock</td>
<td>Mastery</td>
<td>Understand (LOTs) Apply (LOTs)</td>
<td>Describe (where does it live? – visible from picture) Describe (what does it eat? Interpret (how does it move?) Demonstrate (how does it sound?)</td>
</tr>
<tr>
<td>3. Answer 3 initial questions about verse 1</td>
<td>Mastery</td>
<td>Apply (LOTs)</td>
<td>Interpret</td>
</tr>
<tr>
<td>4. Replace 4 words from the first verse with English words.</td>
<td>Mastery</td>
<td>Apply (LOTs)</td>
<td>Interpret</td>
</tr>
<tr>
<td>5. Answer 2 more questions about the first verse</td>
<td>Developmental</td>
<td>Evaluate (HOTs)</td>
<td>Appraise</td>
</tr>
<tr>
<td>6. Play bingo with portmanteau words.</td>
<td>Mastery</td>
<td>Understand (LOTs)</td>
<td>Identify</td>
</tr>
<tr>
<td>7. Guess what happens next in the poem.</td>
<td>Developmental</td>
<td>Create (HOTs)</td>
<td>Conjecture</td>
</tr>
<tr>
<td>8. Complete the verse with their own words in groups to finish the poem.</td>
<td>Developmental</td>
<td>Create (HOTs)</td>
<td>Design/develop</td>
</tr>
<tr>
<td>9. Work with a new group and share their verse. Their new partners try to guess what the added words mean.</td>
<td>Developmental</td>
<td>Evaluate (HOTs)</td>
<td>Appraise</td>
</tr>
</tbody>
</table>
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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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

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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?

Remembering
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Thinking
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g. Who is this song written for, do you think?

Remember/understand

Remember/understand

Analyze/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.

What will happen as a result of this?
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

- Complexity
- Interest Level
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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Your flight path
Encouraging learner choice and reflection on that choice

A chilli challenge

Was the challenge spicy enough?
# Reading Choice Board

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

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.
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.