Slide 1

@jtalmarode

Slide 2

Learning Intention

To better understand how my students learn and the implications on my teaching.

Slide 3

Success Criteria

1. I can explain five key principles of how my students learn.
2. I can describe learning opportunities for my students that integrate these principles into my school or classroom.
3. I can generate additional questions about how my students learn.

Slide 4

Students only remember what they think about.

Slide 5

Tractor	Ocean
Green	Nicely
Apple	Countertop
Zero	Airplane
Weather	Jump
Pastel	Laugh
Quickly	Tall

Slide 6

#1

Complete the following:

1 + 5 = ?
2 + 4 = ?
3 + 3 = ?
4 + 2 = ?
5 + 1 = ?

#2

1. Choose any number between 2 and 9.
2. Add it to itself and record your answer.
3. Then, increase your chosen number by one and decrease your chosen number by one.
4. Add the two resulting numbers. What do you notice?

Hattie, Fisher, and Frey, 2017

Slide 7

#1

Order the following fractions by first finding a common denominator.

19/15	11/15
7/12	41/30
5/6	1/2

#2

1. Predict where you think 11/8 should be on the below number line.
2. Explain why you placed 11/8 where you did.
3. Draw and label a few other points to help you explain your reasoning.

Slide 8

Slide 9

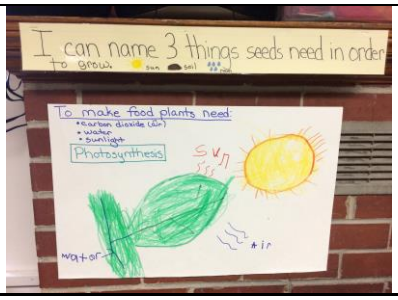
The New Zoo

The Caldwell is opening a new zoo!

Altogether, there are 37 animals in the zoo, and they have 118 legs among them. Two of the animals are snakes. None of the animals are injured or imaginary.

What kind of animals and how many of each kind might be in the new zoo?

Slide 10



Slide 11

Slide 12

Slide 13

Students have to repeat to remember.

Slide 14

Retrieval Practice/Testing Effect

1. Instead of repeated **restu**_____**g**, learners are far better off **tes**_____**g** themselves, both early and often (Roediger & Karpicke, 2006).
2. This does not mean that we **admin**_____**r** more tests, but rather provide numerous **opp**_____**s** for students to **retr**_____**e** previously learned information from memory (Roediger & Karpicke, 2006).
3. The act of **retr**_____**l** is a memory **modi**_____**r**. Whatever **infor**_____**n** is **retr**_____**d** becomes strengthened (Bjork, 1975).
4. With **fee**_____**k**, either by seeing the answers or **rev**_____**g** the information, the benefits of **tes**_____**g** become even more powerful (Hayes et al., 2010; Pashler et al., 2005).
5. For **mult**_____**e – ch**_____**e** questions, have students justify why a particular answer is **cor**_____**t** and why other answers are **incor**_____**t** (Chan et al., 2006; Little et al., 2012).
6. When material is studied over **sev**_____**l sess**_____**s** and tested in a new context, **var**_____**g** the contexts of study results in **be**_____**r perf**_____**ce** (Smith et al., 1978; Smith & Vela, 2001).

Slide 15

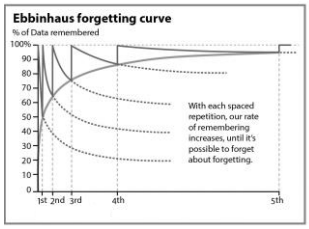
Slide 16

Too much, too fast learning won't last.

Slide 17

Slide 18

The Spacing Effect



Carpenter et al., 2012; Cepeda et al., 2006; Dempster, 1988; Rohrer and Pashler, 2010

Slide 19

Learning is hard and takes time.

Slide 20

Desirable Difficulties

1. A study **st**_____**y** which makes it appear that you are **le**_____**g** quickly now will likely not support your **ab**_____**y** to **rem**_____**r** the information later (Yan, Clark, & Bjork, 2017).
2. The most robust techniques for **l**___**g – t**___**m le**_____**g** are referred to as **de**_____**e dif**_____**s** (Bjork, 1994).
3. For the very same reason that these **str**_____**s** are effective, learners and educators alike judge them to be **ine**_____**e** and **inef**_____**t** (Yan, Clark, and Bjork, 2017).
4. There is a difference between **perf**_____**e** and **le**_____**g**.
5. However, it is not the **st**_____**y** that leads to **l**___**g – t**___**m le**_____**g**, but rather the **cog**_____**e pro**_____**s** which are engaged by these strategies (Bjork & Bjork, 2014).

Slide 21

Option #1

Option #2

Slide 22

Option #1: Blocking

Option #2: Interleaving

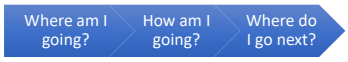
Birnbaum et al., 2013; Kang and Pashler, 2012; Kornell and Bjork, 2008; Rohrer, 2012; Taylor and Rohrer, 2010

Slide 23

Effective feedback leads to effective learning.

Slide 24

Effective Feedback should answer 3 questions for the learner:



Hattie, 2012

Slide 25

Success Criteria

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Slide 26

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