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WHAT KIND OF ANIMAL ARE YOU?

April 24, 2010

Inserting the Unexpected to Enhance Learning

The Agenda

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- Some (boring?) theory
 - Memory
 - Attention
 - Multitasking
- Some fun stuff
 - First me
 - Then you

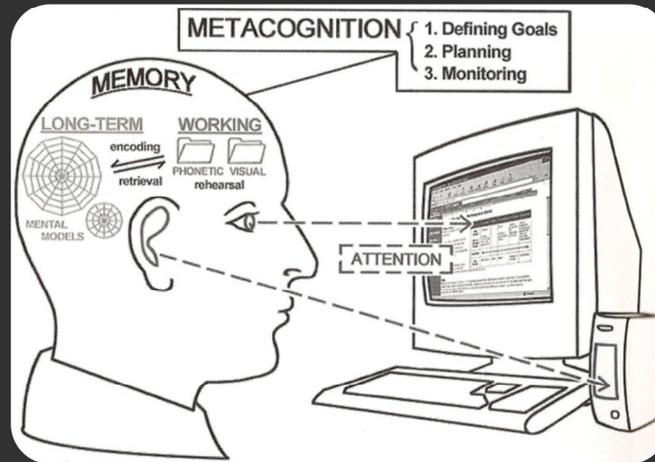


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Cognitive Model of Learning

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Source: Clark, R. C., & Lyons, C. (2004). *Graphics for learning* (p. 57). San Francisco: Jossey Bass Pfeiffer.

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- Attention: directs focus
- Dual channels: words (read/hear) and images (still/video)
- Working memory: 7 ± 2 rule
- Long-term memory: information stored as schema (connected to prior knowledge), mental models
- Transfer from working memory to long-term memory is HARD – multiple exposure, scaffolding, gradual reduction of support
- Learning situations: access prior knowledge from long-term memory -> working memory (schema can be very large & complex)
- Experts can recognize classes of problems and pull from long-term memory the appropriate strategies (e.g., if I have a citation to an article I know that the most efficient way to retrieve it is through the library's journal list, rather than a research database)
- Experts rely on automaticity for different pieces of the problem solving process (e.g., using the Boolean AND)

Dale's Cone of Experience*

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People generally remember:

10% of what they read

20% of what they hear

30% of what they see

50% of what they see and hear

70% of what they say and write

90% of what they do



* Edgar Dale, 1969

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How many of you have seen this before? How many have used it?

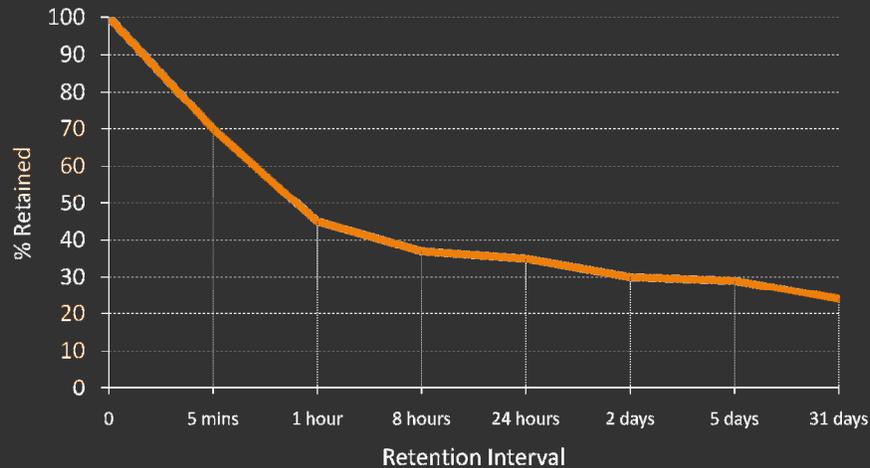
Guess what – it's absolute BUNK!

There's no research or evidence to back it up, and while Dale came up with the "cone," he used it as a means of classifying the concreteness (i.e., levels of abstraction) of various media (but not based on any kind of research); the numbers attached to it are not even his

In other words, there is absolutely no research base to this...but there is plenty of research about forgetting...

Forgetting Curve*

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* Ebbinghaus, 1885

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The **forgetting curve** illustrates the decline of memory retention in time.

Information “half-life” ~ 20 min. (Andrew Booth, health sciences librarian in the UK) – time it takes for someone to forget what they just learned about

*Note: applies to material not reviewed or rehearsed (but no research evidence related to mode or medium of delivery as in Dale’s Cone of Experience)

Some interesting tidbits about lectures (see Booth for refs):

- While teachers are lecturing, students are not attending to what is being said 40% of the time
- In the first 10 minutes of lecture, students retain 70% of the information; in the last ten minutes, 20%
- Students lose initial interest, and attention levels continue to drop, as a lecture proceeds
- Four months after taking an introductory course, students knew only 8% more than a control group who had never taken the course
- Students are generally overconfident about their abilities (e.g., they are unable to accurately judge what they know)

Remember that moving information from working memory to long-term memory takes time and effort – cannot be done immediately (needs to sink in, find connections to prior knowledge)

Flashbulb Memory

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- Highly detailed
- Vivid 'snapshot'
- Surprise, consequence, emotion
- Highly resistant to forgetting?
- Autobiographical
- More accurate if personally significant or repeatedly rehearsed

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Example: What were you doing on Sept. 11, 2001, when you first heard/saw that a plane had hit one of the towers?

Gaining attention in class not at the emotional or consequential level of a flashbulb memory, but perhaps there's something here that can be useful

- element of surprise (i.e., the unexpected)
- connecting to emotions (such as humour)
- making it personally meaningful
- something consequential
- repetition and rehearsal (e.g., telling and retelling)

Attention

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“Attention is the portal through which the information flood reaches the brain. Directing your attention at something is analogous to selecting information, as you give priority to only a small part of all the information available. Attention is often likened to a beam of light or a spotlight. In much the same way as you can aim a flashlight at a certain object in a darkened room, you can direct your attention at selected parts of your surroundings and choose a small amount of information from everything around you.”

~ Torkel Klingberg, *The Overflowing Brain*

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Attention = allocation of processing resources (i.e., it's a cognitive process)
If we do not focus our attention on something, we will not remember it.

Attention span of the average adult = 18-20 minutes

What's competing for the attention of students in your classroom?

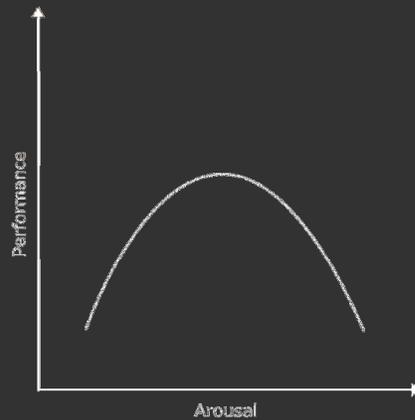
- You (the instructor)
- Computer in front of the student, phone, iPod (media and communication devices)
- On one side, student in Facebook, on the other, student texting, behind, two students talking to each other
- On their mind: assignments, midterm exam, social plans, parents, roommates, work, managing money

How do you get the learner to focus his/her flashlight on the immediate priorities (i.e., what you're teaching)?

(At Least) Three Types of Attention

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- Controlled
- Stimulus-driven
- Arousal



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Controlled: when we consciously focus our attention on something (but is a choice of the learner)

Stimulus-driven: involuntary reaction to an unexpected event in the immediate environment (loud noise, someone spilling a cup of coffee, alarm bell, etc.)

Arousal: nonselective, levels can vary from second to second, hour to hour; can be raised with warning of impending event (external control?)

- This is the kind of attention we want to target – a signal to learners to PAY ATTENTION

But first, need to talk a bit about multitasking (because if we're not paying attention, we won't remember)

Multitasking

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- Magical number 7 (± 2)
- Context switching
- Dual channel theory

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- Human multitasking = performance by an individual of appearing to handle more than one task at the same time (e.g., listening to a radio interview while typing an email)
- Usually there's a cost, in that either or both of the simultaneous tasks suffer in quality &/or speed (due to context switching)
- Some tasks, where one is cognitive and the other is not, however, can be done simultaneously

Designing the Unexpected

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- Online Library Assignment
- Library Tour
- What Kind of Animal Are You?

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A few examples...

Online Library Assignment

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The screenshot shows a web browser with two tabs: "Library Assignment for CMNS 125..." and "Database Menu".

The "Library Assignment" tab contains the following text:

Want to be a star, do you? But seriously, if you read the abstract, you'll get a summary of the video contents.

TIP: The library catalogue often provides summaries, reviews, or tables of contents to give you as much information as possible about the item. Note the colourful book covers, too.

Next

Your score so far: 7 / 8

The "Database Menu" tab shows the University of the Fraser Valley logo and navigation buttons: "Go Back", "New Search", "Previous", "Next", and "Change Dis". Below the navigation buttons, there are several links: "Add to List", "Place Hold", "Find more by this author", "Find more on these topics", "Nearby items on shelf", "Continue search in", and "Google Scholar". On the right side, there is a section titled "Item Informa" with the text "Peace@schoc MacInnes," and "Publication Physical de".

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Online Library Assignment

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Library Assignment for CMNS 125... x Database Menu

Your score so far: 11 / 12

QUESTION 13

When you use the word **AND** to connect two or more keywords, you expect search results that contain:

- Any of the terms
- All of the terms
- None of the terms
- Green eggs and ham

Check my answer

#3 **WM 600 G653 2002**
Details The psychology of group aggression
Goldstein, Arnold P.
Add to List 1 copy for Abbotsford Campus Library in Stacks
Place Hold

#4 **BF 575 A3 G68 1999**
Details Low-level aggression : first steps on the ladder to violence
Goldstein, Arnold P.
Add to List 1 copy for Abbotsford Campus Library in Stacks
Place Hold

#5 **LB 3013.3 5379 1997**
Details School violence intervention : a practical handbook
Goldstein, Arnold P.
Add to List 1 copy for Abbotsford Campus Library in Stacks
Place Hold

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Library Tour

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- Cephalonian method
 - Can I order pizza for delivery in the library?
 - Where in the world is Timbuktu?
 - Can I go yet?

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Cephalonian method (look it up on Google for more info)

- Not what students are expecting
- Takes the pressure off having to think of a question to ask
- Passive -> Active

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- St. Paul's Information Behavior Typology
 - 8 archetypes matched to animal behaviours
- Link to prior experience, research process
- Element of surprise, humour → BUZZ
- Memorable?

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Let me take you through the exercise...

- 1) Think of a recent situation where you had to search for information (can be personal, e.g., choosing a cell phone plan, or related to school or work); how did you go about finding the information you needed?
- 2) Which of these animals most closely matches your experience? (show handout)
- 3) Now turn to your neighbour – find someone who chose a different animal, and talk to each other about your strategies. How can what you do help the other person become a better researcher?
- 4) Now, let's talk about the research process... (Kuhlthau – think about your own strategies, strengths and weaknesses, as we talk about the model)

Now It's Your Turn...

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1. Think of a context relevant to your own teaching (I showed three: tour, online tutorial, and classroom)
2. Think of something unexpected you could do to capture the attention of a student (surprise, emotion, etc.)
3. Compare notes with your neighbour (partners: don't be afraid to ask questions, probe, challenge)
4. Debrief together

References

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Thank You

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Questions?
Observations?
Comments?

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