

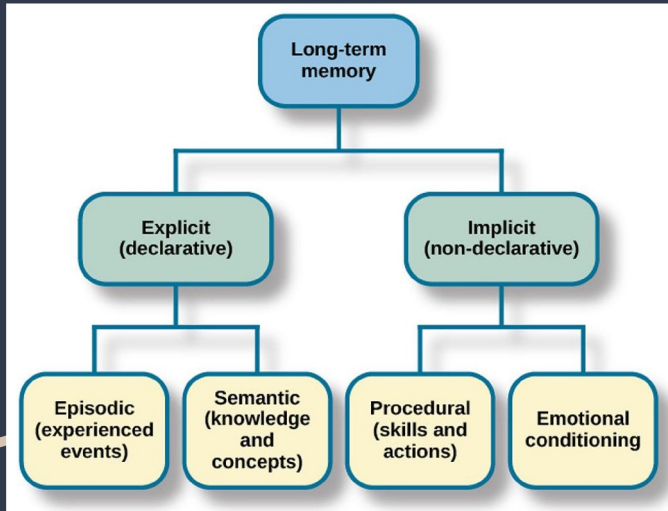
Our Attention Is Limited; Our Memory is Imperfect

Design With The Mind In Mind: Chapter 7
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Long-term Memory



- Perceptions enter through our five senses.
 - (visual, auditory, smell, taste, feel)
- A response is triggered in the part of the brain where each sense starts.
 - i.e the color red starts in the visual cortex
- From the starting spot, the response travels to other parts of the brain where it detects low-level information (starting point) and forms high-level features.
- The context of a stimuli is very important.
 - The context determine what neuron pattern activates
 - The more features stimuli share with each other, the closer the neuron pattern.
- Reactivation of these neuron patterns is how we retrieve our memory.

Properties of Long-term Memory



- Long-term memory is error prone.
 - Seeing a stranger's face for a brief moment you will most likely only be able to remember their skin tone and facial hair / hair color
- Emotions make our memories stronger and more vivid.
 - First day of school vs the tenth
- Memories are alterable.
 - Discussing a shared memory with family, one could remember something that others don't.

was

3. Which of these words were ~~not~~ in the list presented in the working memory test earlier in this chapter: city, stream, corn, auto, twine, spade?

What Does This Mean for Long-Term Memory in UI?

- Don't burden users with having to remember memories.
 - Creating a long pin they must remember
 - Security questions to register.
- Design different functions similarly so when the user is learning how to use them, there is less for them to learn and remember.

Security question

If you forget your password, your security question helps establish that you own your account.

Question

Write my own question

What is the name of your best friend from childhood?
What was the name of your first teacher?
What is the name of your manager at your first job?
What was your first phone number?
What is your vehicle registration number?
What is your library card number?
Write my own question

Short-term Memory



- Short-term memory is the combination of perception, attention, and retrieval of long-term memory
- One of the biggest parts of our short-term memory is called our working memory.
- Working memory is the very small subset of perceptions our attention mechanisms focuses on.
 - This could be involuntary or voluntary
- Each sense has its own short-term “memory”
 - Potential inputs for working memory
 - Example: Recalling a long-term memory

Properties of Attention and Working Memory



- Attention is selective and focused.
 - You are unaware of what is going on around you
- Our perception is primed by our goals
 - Example: finding friend in a mall
- Our attention is drawn to:
 - Movement (near or towards us)
 - Threats
 - Faces of other people
 - Sex and food
- The two primary characteristics of working memory are: low capacity and volatility.

Capacity of Working Memory

202-555-0191

202-555-0191

202-555-0184

202-555-0199

202-555-0165

International (US)

+1-202-555-0184

- Current perceptions are the items in working memory.
- The items in the working memory will not be the same.
 - If they are the same, then it will be considered one item since the neural activity will be one big one.
- Our working memory allows us to hold 4 +/- 1 item.
 - If chunking is allowed, storing 2 or more items together, then the number jumps to 7 +/- 2
- There still is on going research to whether the capacity of working memory should include chunking or not.

Volatility of Working Memory



- When your attention shifts from one thing to another, you are at risk of losing the first item.
 - The spotlights in the warehouse
- An example is adding a long list of numbers then your attention shifts to something else resulting in you having to restart

3 8 4 7 5 3 9

3 1 4 1 5 9 2

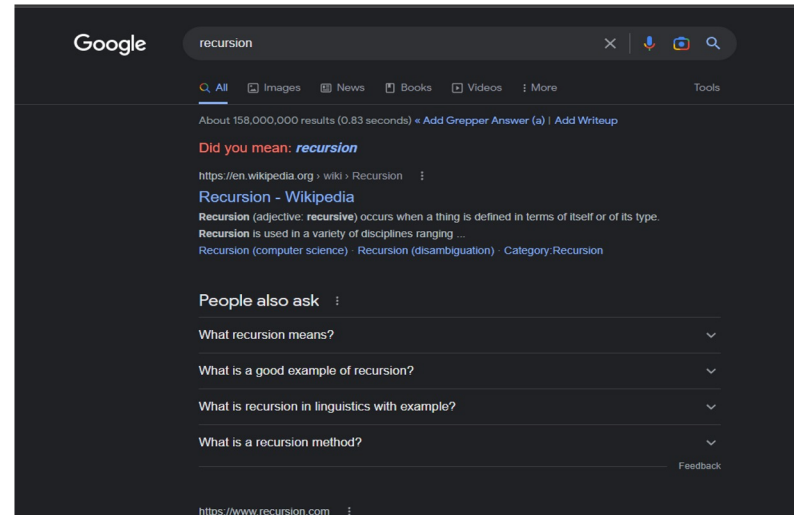
1 3 5 7 9 11 13

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what is the meaning of life

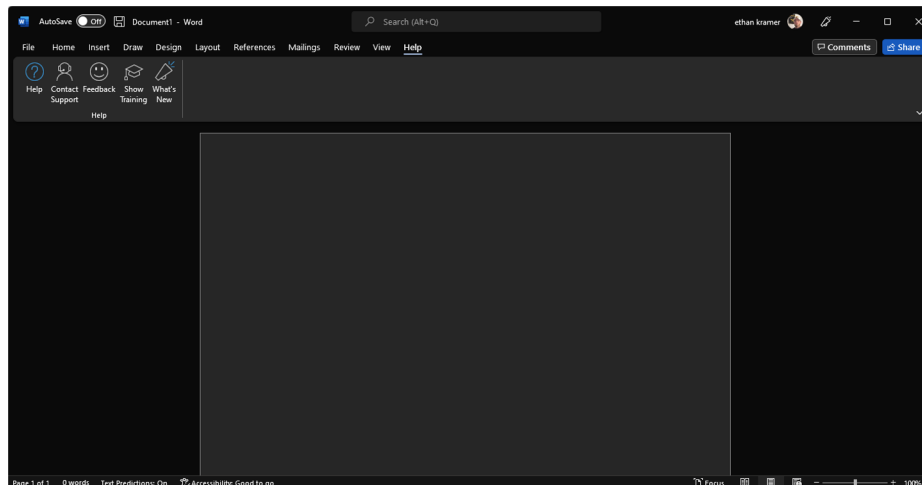
What Does This Mean for Short Term Memory in UI?

- Don't rely on users remembering what they have done or system status
- With the mode approach make sure there is ample feedback so the user knows what mode they are in.
 - Allows multiple actions to happen while using the same action (going forward or backward in a car using the gas pedal).
- Disadvantage of modes is users tend to forget what mode they are in resulting in error.
 - Feedback is not strong enough
- When a user searches for something, show them what they have searched for. They will typically forget once they have looked through the results.



Short Term Memory in UI Cont.

- Only give the user one goal to complete (call to action). If there is multiple they will tend to remember the first one and ignore the rest.
 - Don't distract them from the goal once they start.
- If a user needs to complete a task that requires multiple steps, make sure there is a place for them to reference it later.
- Don't make directories too deep so the user can remember where they are at.
 - Allow the user to see where they are at in the directory.



Thank You