

## What Graduate Students Need to Know about Learning, Memory and Development

Carrie B. Myers, Anna Zelaya, and Catherine M. Johnson



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## Neuroplasticity



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## Hebbian Theory

- What you focus on, you literally are strengthening or weakening the synaptic connections between the neurons of your brain.



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## Mindfulness

- The practice of becoming aware of what you are paying attention to right here, right now, without being distracted. Cognition then, allows you to do something the same or something differently next time.



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$$E + R = O$$

- Between **EVENT** and **RESPONSE** there is space. In that space is our power to choose our response and impact the **OUTCOME**. In our response lies the opportunity for us to learn and develop.



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## Intentionally Changing your Brain

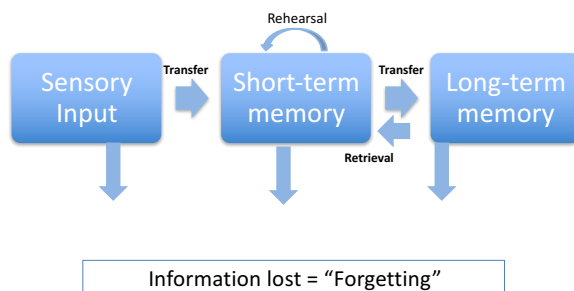
- Attention Regulation
  - Becoming aware of how and what you pay attention to
- Emotional Regulation
  - Becoming aware of how you manage your emotions
- Cognitive Regulation
  - Becoming aware of your cognitive processing and directing your attention to a desired outcome while regulating your emotions on demand

## Learning and Memory

### Brain Storming Activity (1 min)

- What do you know about memory?
- How are memory and learning related?

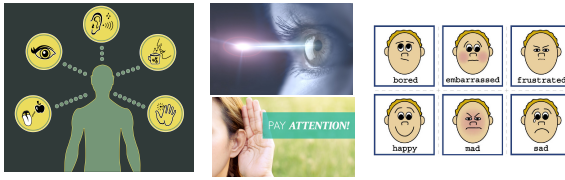
### What does the research tell us about how students learn?



## Theories on Memory and Learning


- Social learning theory (Millar and Dillard, 1941)
- Modal Model (Atkinson and Shiffrin, 1968)
- Perry's Schema of Learning (Perry, 1970)
- Experiential Learning Model (Kolb, 1986)
- Brain-based learning (Zull, 2002)
- Blooms Taxonomy of Learning (Bloom, 1956 and 1964, revised 2004)

## Information: What is "Absorbed" & Why?




The diagram illustrates the process of information absorption. It starts with 'Sensory information' represented by icons of an eye, ear, nose, and hand. This leads to 'Attention', shown as a hand cupping an ear with the text 'PAY ATTENTION!'. Finally, it leads to 'Emotions, Feelings, and Attitudes', represented by a grid of six faces with labels: bored, embarrassed, frustrated, happy, mad, and sad.


Sensory information      Attention      Emotions, Feelings, and Attitudes

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## How relevant is the material?

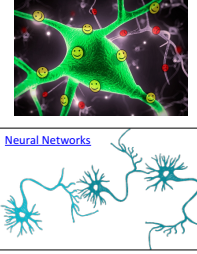


A cartoon illustration of a cavewoman with a large thought bubble above her head. Inside the thought bubble, there are six smaller cavewomen, each with a different facial expression and a label: bored, embarrassed, frustrated, happy, mad, and sad. This illustrates the concept of how relevant the material is to the learner's current state.


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## Emotion is a crucial component

- Throughout the learning process, the brain is constantly secreting "emotion chemicals" (neurotransmitters/hormones)
- They act by modifying the strength and contribution of every step of cognitive and physical learning
- Emotions directly affect the brain signaling systems (neurons/neurotransmitters/synapses)




The image shows two illustrations of neural networks. The top one is a 3D-style illustration of neurons with glowing green and red connections. The bottom one is a 2D line drawing of neurons with the text 'Neural Networks' above it.


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## Working Memory

- Absorbed information is stored and processed
- Associations with prior knowledge are formed
  - New input + retrieval of stored memory (long-term)
- Involves multiple components
  - sounds, images, words, problem-solving
- Limited amount of information can be held at any given time




A cartoon illustration of a brain with legs, arms, and a face, lifting a very heavy barbell. This visualizes the concept of working memory being limited and the effort required to hold information.


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## Long-term memory and the importance of cues for information retrieval


- Information that was absorbed and processed is transferred and stored for future **retrieval**
- The more associations created (via sensory/working memory), the easier it will be to **retrieve** stored information
- Cues** – surroundings, mood, etc, that is connected to material. The more cues, the better likelihood of retrieval




A photograph of a long, arched hallway with high ceilings and many bookshelves, likely in a library or museum. This represents the concept of cues and surroundings that can help with information retrieval.

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## How can we use this information in the classroom?

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How vivid is the presented material?  
Is there an emotional impact?  
Will it grab and hold their attention?



Try to avoid pure abstraction  
Accompany information with sounds, visuals, movement

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How relevant is the material?



Think about why the material is relevant to you  
Ask your students what is relevant to them

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Personal Participation: Active Learning




- Playing with objects
- Exploring
- Experimenting
- Talking
- Drawing

- Writing (encourage note-taking!)
- Reading
- Speaking (wait for answers!)
- Applying
- Reflecting
- Practicing/rehearsing

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1-Minute Reflection



On a sheet of paper, reflect and respond to the following:

1. What information about memory and learning was most interesting, useful, or relevant to you?
2. How might you use this information to inform your teaching this semester?

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**Self Authorship and Professional Identity through the Lens of Socialization Theory**

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**Activity: Professional Identity Strengths**

1. Reflect on one of your most satisfying professional accomplishment.
2. What contributed to this accomplishment?
3. How might your prior experiences inform your future career and what you want to accomplish?

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## Self-Authorship Defined

"A new whole, an internal identity ... that can coordinate, integrate, act upon, or invent values, beliefs, convictions, generalizations, ideals, abstractions, **interpersonal** loyalties and **intrapersonal** states. It no longer authored by them. It authors them and thereby achieves personal authority."  
(Kegan, 1982, 1994)




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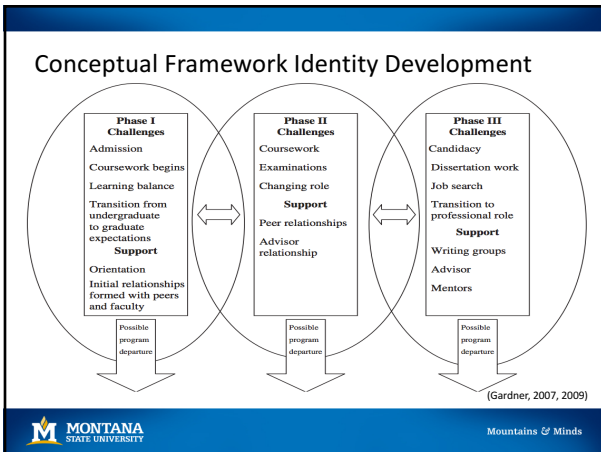
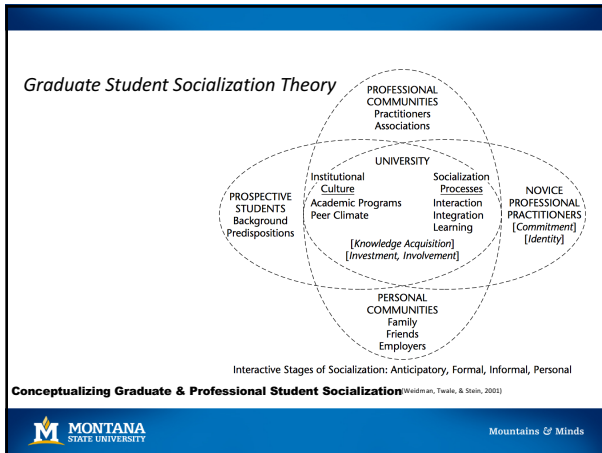
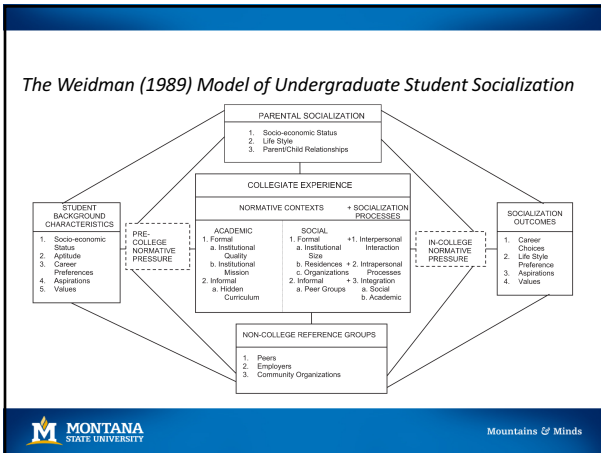
## Socialization Defined

"the process by which persons acquire the knowledge, skills, and dispositions that make them more or less effective members of their society" (Brim, 1966, p. 3)

The internalization of membership happens informally and formally, ultimately resulting in integration, role commitment to the member group and role acquisition in the chosen group or organization.




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## Identity Activity


1. Who do you want to be as a teacher?
2. How do you behave in a way to reinforce that teaching persona?



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## 12 Credit College Teaching Certificate

Required Courses	Course Electives
<ul style="list-style-type: none"><li>• EDLD 635 College Teaching</li> <li>• EDLD 574_06 College Teaching Practicum</li></ul>	<ul style="list-style-type: none"><li>• EDLD 628 College Students</li> <li>• EDLD 529 Postsecondary Distance Delivered Education</li> <li>• EDLD 531 Theoretical Foundations for Student Development</li> <li>• Other</li></ul>

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## Thank you!

- Questions?
  
- Contact Information
  - Carrie B. Myers [cbmyers@montana.edu](mailto:cbmyers@montana.edu)
  - College Teaching Certificate [http://www.montana.edu/education/grad/ahe/ahe\\_ctc.html](http://www.montana.edu/education/grad/ahe/ahe_ctc.html)
  - Anna Zelaya [azelaya.mt@gmail.com](mailto:azelaya.mt@gmail.com)
  - Catherine Johnson [catherine.johnson7@montana.edu](mailto:catherine.johnson7@montana.edu)

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