Brain-based model of best practices in Extension education for

Soil Health: How to Lead Change

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Four Best Practices for Adult Learning

1. Provide a safe environment for learning.
2. Link content to learners’ current knowledge.
3. Identify learners’ mental models about the content.
4. Let learners work together to experiment and solve problems with the content.
To facilitate learning, put the best practices into action . . .

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Brain-based Best Practices in Extension Education

a LEARNING EVENT
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Six Core Emotions

- Joy
- Surprise
- Sadness
- Disgust
- Anger
- Fear
Core Emotions influence the feeling of “safety” in learning

“Positive”
Trigger these . . .

Really try to trigger this
(It creates a “dopamine response” that primes the brain for learning)

Really avoid things that trigger this
(It shuts down learning centers in the brain)

“Negative”
Avoid triggering these . . .

Notice the greater proportion of “negative” core emotions? That’s called the brain’s “negativity bias.” Any ideas why we are wired that way?
Best Practice Examples

DURING a learning event, provide a safe environment for learning

✓ Take time for personal introductions
✓ Frame errors as learning opportunities
✓ Receive opposing viewpoints non-judgmentally
✓ Be interactive; include humor and surprise
✓ Introduce topics with a surprising fact or image
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Learners develop networks of neurons based on their prior experiences.

These networks represent knowledge, skills, and values associated with each “domain” in their lives.

Learning involves modifying existing neural networks and creating new networks.
Hypothetical target Neural Network as a result of participating in a Farm Management Curriculum
Linking new learning to existing knowledge and skills, helps establish new neural networks.

- **Yellow** = Farm Management knowledge and skills
- **Green** = Completing annual tax returns knowledge and skills
- **Red** = Links between existing and new knowledge and skills
Based on prior experiences in a life domain, adults develop a set of inferences, assumptions, and expectations about future experiences in that domain.

This set of inferences is a **Mental Model**.
Mental Models

• Influence whether and how individuals will receive the learning opportunities you offer.

• Individuals are likely to reject new information that conflicts with their existing mental models.
Mental Models

• Tightly held
• Slow to change
• Usually tacit
• Can be source of misunderstanding
• Need to be uncovered and made explicit
Best Practice Examples

BEFORE a learning event, identify learners’ mental models about the content, and their existing knowledge and skills.

✓ At registration for events, conduct brief survey with questions about prior knowledge and attitudes

✓ In one-on-one interactions, ask open-ended questions to gain insight into values and preferences behind decisions.

THEN, align information and activities to learner characteristics.

Recognize you must address attitudes and assumptions in Mental Models as well as knowledge gaps.
Example questions to help uncover Mental Models

What problem have you had with __________________? How did you go about addressing it?

Can you tell me what led you to __________________? What type of things did you consider when you made that decision?

You seem to feel strongly about __________________? Can you tell me a bit more about why you feel strongly about it?
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Humans are “wired” to learn from each other. Mirror System neurons enable learning through imitation.

Experimentation and Problem Solving increase neural network complexity, which supports adaptability and creativity.
Best Practice Example

AFTER a learning event, let learners work together to experiment and solve problems with the content

✓ Connect farmers with farmer-mentors
✓ Establish a community of practice or farmer learning group
✓ Provide contact lists for ongoing communication
✓ Send farmers home with an assignment
✓ Provide incentives and support for farmers to do a small trial
### Summary

#### Brain-based Best Practices Planning Grid

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Questions?
It’s what’s inside that counts: A brain-based model of best practices in Extension education

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