The Neuroscience of Motivation: The Brain’s Natural SEEKING System

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Learning Intentions:
• Understand Motivation & Engagement.
• Introduce the neuroscience of the SEEKING system and Motivation
• Understand two Motivation “Inhibitors”
• Identify the three unique levels of the SEEKING system.
• Suggest classroom conditions that maximize motivation and engagement.

Motivation
• derived from the Latin movere, to move.

Motivation is the result of all organisms being in a position to “choose, seize and even seek out satisfaction”.

ASCD Member Book: September 2015
See the book’s table of contents and read excerpts at the ASCD Website
http://www.ascd.org/Publications/Books/Overview/The-Motivated-Brain.aspx

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Motivation
• Moving towards…
• Attracted to…
• Seeking satisfaction…
• “Wanting”…

Motivation: The force or energy that results in engagement.
What is true “engagement?”

Student engagement occurs when:
• Students make a psychological investment in learning.
• Students are involved in their work,
• Students persist despite challenges and obstacles
• Students take visible delight in accomplishing their work.

Possible Factors for Student Engagement
• Will I get to work with others? (Collaboration)
• Will I get to move around? (Kinesthetic)
• Will this be fun? (Humor – pleasure)
• Will I get to choose what I learn or how I learn it? (Self-regulation)
• Will there be a little friendly competition/pressure? (Challenge – rewards)
• Will there be recognition of my achievement? (Product, Performance, Contribution)
• Will it make me feel “excited” and interested? (Emotional High – feelings)
• Will I get to use technology? (21st Century skills – digital generation)

Engagement
• Fully involved in the learning process: enthusiastic and willing to take steps forward.
• Fun and excitement: having a joyful outlook no matter what you are involved with
• Curiosity and creativity: questioning the world you live in and creating new things
• Spirit of adventure: being excited to venture forth, risking and trying new things

Students who are engaged:
- Learn at high levels and have a profound grasp of what they learn.
- Retain what they learn.
- Can transfer what they learn to new contexts.
FLOW Theory:
Mihalyi Csikszentmihayli

FLOW = state of optimal engagement

➢ Challenge and skill level are well matched
➢ Choice and options are available
➢ There is an intrinsic sense of satisfaction
➢ Feedback is ongoing
➢ Time goes by unnoticed
➢ The learner is ‘in the learning groove’
➢ Students are inspired by the task or activity to persevere

Engagement =
Being in FLOW

FLOW ZONE

CHALLENGE - TASK

SKILL – ABILITY (Perceived)

Seven Primary Emotional Systems

1. SEEKING – Enthusiasm / Expectancy
2. FEAR – Anxiety
3. RAGE – Anger
4. LUST – Sexual Excitement
### Additional Primary Emotions

5. **CARE** – Tender & Loving – Nurturance
6. **PANIC/GRIEF** – Sadness & Loneliness (Psychic pain)
7. **PLAY** – Social Joy – Friendly interaction - Happiness

### SEEKING System

- Curiosity
- Interest
- Foraging
- Anticipation
- Craving

### Inspiring Student Engagement

- One Discovery about Intrinsic MOTIVATION
- Two MOTIVATION “INHIBITORS”
- Three Levels of “MOTIVATION”

### Dopamine (DA)

- Is one of the main brain chemicals released when we are *seeking, anticipating*, being *motivated*.
Dopamine is responsible for motivation

- The good feelings one has in looking forward to something good, not the pleasure of obtaining something good.

OLD Belief:
Our “reward system” is triggered when we complete a task...

NEWSFLASH:
The SEEKING System provides us with continued enthusiasm, interest and motivation while we are in the midst of processing incoming information that is important for us.

- You never want the thing, you want the wanting of the thing.
- The dopamine hit comes from the want, not the thing.
We feel good while we are doing tasks – not just upon their completion.

Dopamine
- Gets us “Up and Out”
- Ignites our curiosity!
- Makes us excited when we think we’re going to get what we need.
- “Motivational Engine”

“Sustained Anticipation”
Exciting feelings as we look forward to positive experiences and pleasurable activities.

Diminished Student Engagement
1. Technology
2. Immediate Gratification
3. Fixed Mindset About Ability
4. Lack of Relevance
5. Apathy
6. Poverty
7. Social Isolation
8. Stress
Diminished Student Engagement

1. Stress
2. Lack of Relevance
3. Fixed Mindset about ability
4. Social Isolation

Brain-Friendly Classroom Environment

- Safe & secure climate and environment (Socially, emotionally, physically and psychologically)
- Known plans, clear procedures & expectations
- Inclusive supportive community of learners
- “Give it a go!” atmosphere promotes a Growth Mindset
- Tasks are novel, relevant, meaningful

Motivating 21st CENTURY LEARNERS?

- TECHNOLOGY / MEDIA
- POP CULTURE – CELEBRITY
- FRIENDS / PEERS
- FUN / LAUGHTER / PLAY
- MOVEMENT / ACTIVITY
- SEX/LUST
- MONEY
- PRESTIGE / INFLUENCE

The three levels of how our brain is motivated to seek out information in the world:

1. Exploration
2. Connections
3. Synthesis/Creativity
Three Processing Levels of the SEEKING SYSTEM

Discovery / Exploration:

- Exploring the environment for resources and pleasure

“Anoetic” Consciousness = without explicit knowledge.

- At the primary processing level, we are not consciously trying to learn and are intrinsically motivated.
SEARCHING FOR CUES

- Can I eat it?
- Can it eat me?
- Can I mate with it?
- Can I do something fun?
- Can I get something?

Novel or interesting (or threatening) stimuli garner our attention

- Colorful visuals, Media
- Interesting sounds, music
- Things to examine (tactile), Things to smell and taste

Create classroom conditions for Level 1 SEEKING to flourish:

- Enriched environments
- Collaborative activities
- Unstructured, spontaneous play
- Recognition of students’ needs and preferences
- Time to explore and make choices

Secondary Processing

- “Coupling”
  - Hooking to prior learning
  - Relevance to daily lives
Secondary Processing - Learned

• “Coupling” – Connecting new info to past experiences and learning.
• Linking urges and drives in the brain to objects and opportunities
• Anticipation builds engagement
• “Liking”

Conscious Learning

• When an experience gets intense enough or proves to be of value, we can describe and reflect on it.
• “Recognized awareness” is the beginning of the learning process.

Conscious Learning

• Sensory stimulation and feedback from an experience or action = “noetic consciousness”
• “knowing about the world.”

Satisfaction = Reward

• When we make a connection the Opioid system engages with a short burst of endorphins, etc.
• “Recognized awareness” is the beginning of the learning process.
Secondary Processing = Wanting

- Make a *connection* to what we already know and have an interest in
- Offer opportunities to *socialize* and connect with others

Encourage the Secondary processing system in the classroom by:

- Discussing new learning experiences;
- Making a connection to prior learning;
- Discovering relevance to students’ daily lives;
- Creating sustained anticipation and interest;

Tertiary: Enacting and Extending

- Applying ideas
- Using Higher levels of thinking
- Synthesis and creativity
- SEEKING answers to new questions

Through projects and problems

Strategic Thinking

- Develop *higher mental processes* as we create hypotheses, make predictions, and fine-tune our expectations.
Encourage the Tertiary processing system in the classroom:
- Reflect on new learning experiences through metacognition.
- SEEK answers to big questions & imagine possibilities
- Promote creative thinking & problem-solving (risk-free, allow do-overs)
- Help students stay in the “struggle”

Metacognition
- Metacognition is the ability to critically analyze how you think, or, in simple terms, having self-awareness and control of your thoughts.
- It is best described as developing appropriate and helpful thinking strategies at each stage of a task.

Metacognition Questions
Here are nine simple questions that can help develop metacognitive strategies in three stages:

Before a Task:
1) Is this similar to a previous task?
2) What do I want to achieve?
3) What should I do first?

During The Task
4) Am I on the right track?
5) What can I do differently?
6) Who can I ask for help?
Metacognition Questions

Here are nine simple questions that can help develop metacognitive strategies in three stages:

**After a Task**
7) What worked well?
8) What could I have done better?
9) Can I apply this to other situations?

REBOOTING Student Motivation

1. Teach students about the brain’s “SEEKING SYSTEM”
2. Address the “Stress Mess”
3. Be relevant! Know thy learner!
4. Create daily opportunities for Discovery / Exploration.
5. Differentiate! Instructional Variety
6. Provide multiple Collaborations / Social Interactions

How can we use this research in the classroom?

- Unpredictable – variety
- Small bursts – limited information
- Visual and auditory cues
- Generate an “action” = doing

We **Seek** and **Choose** Tasks That …

- Appeal to our learning preferences.
- Remind us of our past successes.
- Are within our realm of possibilities.
  (I think I can!)
- Look like they might be fun.
- Might let me get up and move.
- Let me work with others.