Microbursts of Educational Principles and Theories

Denise Downey MSN
Kathleen Huth, MD, MMSc
Erica Lee, PhD
Mary McLellan, MPH, BSN, RN, CPN, CPH
Meghan Sullivan, MSW, LICSW

Disclosures

• The speakers do not have any financial relationships to disclose.

Learning Objectives:

By the end of this session, participants will be able to:

- Examine 5 core educational principles and theories
- Reflect on how core principles and theories inform best teaching practices
- Use core principles and theories to solve examples of clinical teaching (and life) challenges
Educational theory—why should I care?

- Reveals how learners perceive, process and apply new information
- Helps us design teaching sessions to optimize learning

---

Micro-Bursts
- Adult Learning Principles
- Self-Determination Theory
- Growth Mindset
- Cognitive Load
- Deliberate Practice

---

Adult Learning Principles

- Kathleen Huth, MD, MMSc
  Complex Care Service, Boston Children’s Hospital
Think about a particularly effective clinical teacher you've had...
What made the teacher effective?
When do you learn best?

Adult Learning Principles

1. Allow learners to be self-directed
   Adults learn best when they have some responsibility for what and how they learn!
   ✷ Involve learners in the planning and evaluation of their instruction.
2. Activate prior experience

“To children, experience is something that happens to them. To adults, experience is who they are.”

“The resource of highest value in adult education is the learner’s experience... Too much of learning consists of vicarious substitution of someone else’s experience and knowledge... Experience is the adult learner’s living textbook.”
-Lindeman 1926

3. Create relevance

Adults are motivated to learn if it is relevant to real-world situations
➢ Connect your teaching to your learners’ daily practice

4. Focus on problems, not topics

Adults are goal-oriented and are motivated to use learning to solve problems
➢ Tailor teaching to help learners with daily challenges
### Slide 13

**Adult learning principles in practice**

<table>
<thead>
<tr>
<th>Principles</th>
<th>Questions</th>
<th>Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult learners are self-directing. They learn best when they have some responsibility for what and how they learn.</td>
<td>What are ways you can incorporate opportunities for learners to make decisions about their own learning? (i.e., the type of task, order of activities, etc.)</td>
<td>Decide what to do next. Get learners to decide which theory to dive into next.</td>
</tr>
<tr>
<td>Prior experience shapes what the adult learner is and how he/she approaches problems.</td>
<td>What are ways you can make learners aware of how their past experiences have shaped their current learning?</td>
<td>Provide different ways to participate: breakout, chat, etc. Ask learners: which theory do you want to dive into next?</td>
</tr>
<tr>
<td>Adult learners are goal-oriented and interested in using learning to solve problems, rather than memorizing content.</td>
<td>What will the activity enable your learners to do in their regular practice?</td>
<td>Create relevance. Share “why should I care?” Discuss how the session will impact learners’ practice as educators.</td>
</tr>
</tbody>
</table>

### Slide 14

**Adult learning principles in practice...today!**

<table>
<thead>
<tr>
<th>Principles</th>
<th>Questions</th>
<th>Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow learners to be self-directed</td>
<td>What are ways you can incorporate opportunities for learners to make decisions about their own learning? (i.e., the type of task, order of activities, etc.)</td>
<td>Decide different ways to participate: breakout, chat, etc. Ask learners: which theory do you want to dive into next?</td>
</tr>
<tr>
<td>Activate prior experience</td>
<td>What are ways you can use a learning experience to help learners see and use their experiences as resources?</td>
<td>At the start, how do you feel about educational theory? How familiar are you with these theories?</td>
</tr>
<tr>
<td>Create relevance</td>
<td>What will the activity enable your learners to do in their regular practice?</td>
<td>“Are you ready?” Discuss how the session will impact learners’ practice as educators.</td>
</tr>
<tr>
<td>Face any problems and tackle them</td>
<td>What are ways you can make the activity applicable to challenges faced by the learner?</td>
<td>Consider how each principle can be applied to their next teaching session.</td>
</tr>
</tbody>
</table>

### Slide 15

**Adult Learning Resources**

Slide 16

Micro-Bursts

- Adult Learning Principles
- Self-Determination Theory
- Growth Mindset
- Cognitive Load
- Deliberate Practice

Slide 17

Self-Determination Theory

Erica Lee, PhD
Department of Psychiatry
January 12, 2021

Slide 18

What is Self-Determination Theory?

- Self-determination: the ability to make choices and control one's life

- Self-Determination Theory (SDT): individuals are intrinsically motivated to grow; growth is facilitated by meeting autonomy, competence, and relatedness needs (Deci & Ryan, 1985)
Slide 19

3 Innate, Core and Universal Needs Facilitate Growth

- Autonomy: the need to feel you are a master of your behavior and destiny and have control over your life.
- Connectedness: the need to have a sense of belongingness, relatedness and acceptance.
- Competence: the need to learn different skills and develop mastery over tasks that matter to you.

Slide 20

How can you support these needs in medical education?

- Assign learners an active role in teaching environments.
- Provide opportunities to make decisions.
- Scaffold learning and skills practice.
- Share meaningful feedback.
- Offer support and encouragement.
- Facilitate opportunities for bonding between learners and teachers/learners.
- Be intentional about self-disclosure.

Slide 21

Breakout Groups!

- A learner in your course has seemed disengaged in seminars. He also hasn’t completed home practice assignments to apply new clinical skills. You check in with him and find out that he feels unmotivated to participate. He says the material is “over his head,” he doesn’t have friends in the class, and he dislikes being evaluated as part of a group. He adds that he only comes to seminar because it’s required.
- Using Self-Determination Theory, what are some reasons why this learner is struggling? How could you re-engage him?
Slide 22

When you join the breakout group, please introduce yourselves by giving your first and last name and hospital role.

Slide 23

Why is the learner struggling? How can you re-engage him?

Slide 24

Cognitive Load Theory

Mary C McLellan MPH, BSN, RN, CPN, CPH
Clinical Inquiry Coordinator
Inpatient Cardiology, Boston Children's Hospital
Slide 25

Cognitive Load Types

Intrinsic Cognitive Load
Nature of the learning task
Effort placed on learner to process
Experience/knowledge of learner

Extrinsic Cognitive Load
Manner/environment which the material is presented

Germane Cognitive Load
Capacity of working memory to process information presented

Slide 26

Information processing model


Slide 27

Cognitive Load Theory approach

Optimize Intrinsic Load
Minimize Extrinsic Load
Maximize Germane Load

Slide 28

Reduce extrinsic load

Slide 29

Worked example

Slide 30

Optimize learning environment
Modality Principle
Slide 31

Information presentation

Avoid
• Tangents
• Unnecessary redundancy
• Dense slides / materials
• Split-attention material

Nice-to-Know
Should Know
Must Know

Slide 32

Optimize intrinsic load

Slide 33

Isolate elements.
Move from simple to complex.

Low vs. high-fidelity learning opportunities


Isolate elements.
Move from simple to complex.

Low vs. high-fidelity learning opportunities

Slide 34

Maximize germane load

---

Slide 35

- Encourage self-reflection
- Encourage imagination
- Offer variability
- Fading guidance

---

Slide 36

Slide 37

Growth Mindset

Meghan Sullivan, MSW, LICSW

---

Slide 38

Growth vs. Fixed Mindset

<table>
<thead>
<tr>
<th>Fixed Mindset</th>
<th>Growth Mindset</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;I can either do it or I can't.&quot;</td>
<td>&quot;Failure is an opportunity to grow.&quot;</td>
</tr>
<tr>
<td>&quot;When I'm frustrated I give up.&quot;</td>
<td>&quot;I can learn to do anything I want.&quot;</td>
</tr>
<tr>
<td>&quot;I don't like to be challenged.&quot;</td>
<td>&quot;Challenges help me grow.&quot;</td>
</tr>
<tr>
<td>&quot;I take feedback and criticism personally.&quot;</td>
<td>&quot;Feedback is constructive.&quot;</td>
</tr>
</tbody>
</table>


---

Slide 39

Teacher Bias

- We all have biases!
- Racial disparities are well documented in healthcare and medical education.
- How do you think about your students/learners individually?
- You can change your behavior in an active effort to give every student the chance they deserve to learn.
- The important first step is acknowledging that you hold biases.

Reframe Feedback

- Reward not just effort but learning and progress
- Celebrate your learner’s growth
- Emphasize learning well over learning quickly
- Reward actions instead of traits
- Abandon the idea of succeeding on talent alone; recognize that it will always take hard work as well!

Breakout Groups

- When you join the breakout group please introduce yourselves by giving your first and last name, as well as your role within the hospital.

Deliberate Practice

Microburst of Education Theory
Denise Downey MSN, RN-BC, CPEN
1/12/21
**Slide 43**

**Deliberate Practice**

What is it?
• Strategy to develop expertise with a skill or procedure
• Purposeful, systematic, intentional and repetitive practice
• Regular, informed feedback from instructor/expert
• Repeated cycles of focused practice and self-editing
• Self-reflective feedback loop
• Expert performance is the result of expert practice

Examples - Music, sports

**Slide 44**

**Deliberate Practice**

From the Learner:
• Significant personal effort to initiate and maintain
• High repetition with immediate feedback
• Going slow but going correctly
• Self-regulation, intense concentration
• Short term goals, long term target
• Evaluation of the process and how to improve
• Push outside of comfort zone (avoid mindless automation)

**Slide 45**

**Deliberate Practice**

Educators - Why do this?
• Accelerate learner’s professional growth
• Reach learner’s potential
• Learner becomes the expert
• Promotes growth mindset
**Slide 46**

**Deliberate Practice Key Concepts**

1. Identify task/goal
2. Incorporate existing knowledge
3. Break large tasks into smaller ones to reduce cognitive load
4. Repetitive practice outside of comfort zone
5. Regular feedback from effective coach/expert
6.Celebrate small successes
7. Practice alone, allow for self-reflection, self-correction
8. Correct deficiencies and try again!

**Slide 47**

**Deliberate Practice**

To be successful:
- Invest time
- Humility to learn and incorporate feedback
- Passion to excel
- Belief in ability to succeed

*Expert performance is the result of expert practice*

**Slide 48**

**Deliberate Practice**

As educators, how can we apply it?

Task:
Teach a novice how to place a peripheral IV using concepts of Deliberate Practice

Extra Credit:
What other educational principles that we learned today could apply to this scenario?
Micro-Bursts

- Adult Learning Principles
- Self-Determination Theory
- Growth Mindset
- Cognitive Load
- Deliberate Practice

What change(s) do you plan to implement in your practice?

- Adult Learning Principles
- Self-Determination Theory
- Growth Mindset
- Cognitive Load
- Deliberate Practice

Thank you!

Denise Downey MSN
Kathleen Huth, MD, MMSc
Erica Lee, PhD
Mary McLellan, MPH, BSN, RN, CPN, CPH
Meghan Sullivan, MSW, LICSW