Info-Morsel
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Training for Adaptive Expertise

Summary
It has been proposed that "adaptive expertise" be incorporated as a key competency within the Medical Expert role (1). This one pager info-graphic (2) provides practical strategies for helping learners evolve from managing routine encounters to managing more unique or complex clinical situations. Preceptors can model how they think through a particular case or problem by talking through their own thought processes with learners. In turn learners can be encouraged to "think out loud", which helps them organize what they are thinking, providing insight to their conceptual understanding. Hypothetical questioning promotes flexible thinking, and supports learners' ability to adapt to varied contexts. Encouraging learners to follow a reasonable, thoughtful care plan, even if it differs from our own, provides autonomy that often leads to greater understanding in the long run.

Take Away Tidbits:

- Think out loud
- Hypothetical questioning
- Autonomy and self-guided discovery
- Adopt a coaching mindset

Reference:

1-Cupido N, Fowler N, Sonnenberg LK, Karwowska A, Richardson D, Snell L, Thoma B, Mylopoulos M. Adaptive Expertise in CanMEDS 2025. Can Med Educ J. 2023 Mar 21;14(1):18-21. doi: 10.36834/cmej.75445. PMID: 36998497; PMCID: PMC10042796.

2-Branzetti, Jeremy MD, MHPE; Hopson, Laura R. MD; Gisondi, Michael A. MD; Regan, Linda MD, MEd. Training for Adaptive Expertise: Why, What, and How. Academic Medicine 99(1):p 121, January 2024. | DOI: 10.1097/ACM.0000000000005217

Training for Adaptive Expertise: Why, What, and How

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WHY

Background: *Routine expertise* is the efficient use of mastered skills at a high level of competency in familiar situations.

Problem: Novel case variation and continuous scientific advances preclude reliance on routine expertise alone.

Solution: Medical training programs must prepare learners to solve unfamiliar problems by cultivating *adaptive expertise*. Adaptive expertise is the ability to transfer existing knowledge to innovate a solution for an unfamiliar problem.

WHAT

Routine Practice

- Problem: Familiar
- Cognitive processes: pattern recognition, knowledge recall
- Cognitive load: Low
- Outcome: Efficient solution

Adaptive Expert

Shifts approach based on problem

Adaptive Practice

- Problem: Novel
- Cognitive processes: conceptual understanding, knowledge transfer
- Cognitive load: High
- Outcome: Innovative solution

HOW

Developmental principles of adaptive expertise and instructional strategies

Conceptual Understanding

Goal: Help learners develop a deep understanding of a concept or problem.

Rationale: Deep understanding allows for transfer of existing knowledge to novel problems.

- *Cognitive apprenticeship:* Have learners think aloud when solving problems to allow for assessment of conceptual understanding.[1]
- *Elaborative interrogation:* Ask learners "how" and "why" questions to facilitate connections between new concepts and their existing knowledge.[2]
- *Integrative teaching:* Strive to show learners how new concepts or variations in case presentations relate to their existing knowledge.[2]

Meaningful Variation

Goal: Expose learners to different presentations of clinical problems.

Rationale: Case variations help learners draw connections between concepts.

- *Hypothetical questioning:* Use targeted "What if" questions ("What if the patient was immunosuppressed? Or had housing insecurity?") to create case variety around a specific clinical concept (choosing inpatient vs outpatient care).[3]
- *Simulation:* Use simulated experiences (e.g., immersive labs, "oral boards" case practice, task trainers) to expand or supplement any deficiencies in a learner's case mix.[2]

Productive Struggle and Discovery

Goal: Promote learning from challenges or errors in a psychologically safe manner.

Rationale: Productive struggle improves problem-solving skills and long-term learning.

- *Relational autonomy:* Let learners enact different patient care plans from that of the supervising physician if reasonable and well-justified.[4]
- *Guided discovery:* Allow learners to generate their own solutions to problems prior to teaching the right answer or giving corrective feedback.[3]

Self-Regulated Learning

Goal: Develop the learner's ability to use self-directed, life-long learning skills.

Rationale: These skills prepare learners for future learning throughout their career.

- *Create a "how to learn" curriculum:* Include strategies for evidence-based learning (e.g., interleaving, spaced repetition, deliberate practice) and self-regulation (e.g., knowledge gap identification, goal setting, learning efficacy assessment).[1,2]
- *Adopt a coaching mindset:* Ask nonjudgmental, guiding questions to help learners develop new insights, learning goals, and action plans.[2]

Disclosures: Icon created by Freepik from www.flaticon.com.

References:

1. Lajoie SP, Gube M. Adaptive expertise in medical education: Accelerating learning trajectories by fostering self-regulated learning. Med Teach. 2018;40(8):809-812.
2. Branzetti J, Gisondi MA, Hopson LR, Regan L. Adaptive expertise: The optimal outcome of emergency medicine training. AEM Educ Train. 2022;6(2):e10731.
3. Mylopoulos M, Steenhof N, Kaushal A, Woods N. Twelve tips for designing curricula that support the development of adaptive expertise. Med Teach. 2018:40(8):850-854.
4. Schumacher DJ, Englander R, Carraccio C. Developing the master learner: Applying learning theory to the learner, the teacher, and the learning environment. Acad Med. 2013;88(11):1635-1645.

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ACADEMIC MEDICINE | AM Last Page

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