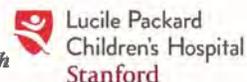


Cognitive Apprenticeship

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Disclosures

- The workshop facilitators have no relevant financial relationships to disclose.
- The workshop will not include discussion of any unapproved, experimental, investigatory, or off-label drugs.



Learning Objectives

- Define cognitive apprenticeship
- Introduce six cognitive apprenticeship teaching methods that can be applied to clinical teaching
 - Modeling, coaching, scaffolding, articulation, reflection, and exploration
- Describe the role of the learning environment

BACKGROUND

Traditional Clinical Learning

- Traditional medical learning includes pre-clinical (non-situational) and clinical (situational) learning
- Learning in a professional (clinical) environment:
 - Helps learners understand the purposes and uses of their new knowledge
 - Traditionally begins by observing, with gradually performing more tasks as competence grows (apprenticeship model)

Challenges to Clinical Learning

- Relies strongly on good clinical supervision
- Daily demands of workplace may overshadow supervisors' teaching responsibilities
- Learners cite variability in clinical teaching due to teachers'
 - Lack of time
 - Lack of formal training

What Is Cognitive Apprenticeship?

- An instructional model whereby teachers/experts make explicit their generally tacit cognitive processes
 - Helps learners to observe, practice, and enact highly cognitive, complex tasks
 - Helps learners to gain both **cognitive** and **meta-cognitive** skills
 - Helps learners to focus their observations of expert performance to facilitate skill development
 - Helps learners gain autonomy through formulating personal learning goals

COGNITIVE APPRENTICESHIP METHODS

Cognitive Apprenticeship's Six Teaching Methods

- Modeling
- Coaching
- Scaffolding
- Articulation
- Reflection
- Exploration

Modeling

- Teachers actively demonstrate and explain skills and procedures to learners
- Teachers articulate approach to problem solving (heuristics) and intentional thought process (controlled processes)
- Learner observes the expert performing a task and asks questions
- Example: teacher performs an I&D while vocalizing steps, indications, and thought processes and offers opportunity to ask questions

Modeling

- Benefits:
 - Helps learners remember why/how a procedure was performed
 - Learners generally highly regard teachers who model
- Challenges:
 - Teachers do not model often enough (learners need repeated demonstrations)
 - Teachers are not explicit enough—don't explain what they're doing and why → learners may imitate without understanding
- Solution: explain rationale for decisions, offer opportunity for questions

Coaching

- Teachers observe learners and provide specific and concrete feedback on their performance
- Goal is to bring the learners' performance closer to expert performance
- Examples: direct observation and coaching for H&Ps or on communication during FCR

Coaching

- **Benefits:**
 - Although learners do not always like being observed, they appreciate feedback about what and how they could do better
- **Challenges:**
 - Faculty time—learners feel they could be observed and coached more often
- **Suggestions:**
 - Place stronger emphasis on observing for **feedback** rather than observing as part of an **assessment**
 - A longitudinal supervisor could observe learners more often
 - Feedback training and faculty development for teachers

Scaffolding

- Teacher inquires about past experience and provides sufficient opportunity for independent activities, while also providing help for activities that are difficult for the learner
- Teacher gradually reduces support as the learner becomes more independent
- Example: Resident leads a meeting with a family; attending steps in for difficult topics like code status. In a future family meeting, attending encourages resident to lead code status discussion.

Scaffolding

- Benefits:
 - Learners feel motivated and appreciate when supervisors show interest in their prior knowledge/skills
- Challenges:
 - Shorter rotations with less time for faculty to get to know learners' levels and provide increasing independence
- Suggestion:
 - Teachers should ask learners about prior experience and challenge them in ways to help them move to the next level

Articulation

- Teacher asks learners to explain their understanding and thought processes
- Teacher encourages learners to ask questions
- Examples: assessment-first presentations (ASOAP), getting a commitment (one-minute preceptor), persuade the teacher

Articulation

- Benefits:
 - Deepens knowledge, understanding, and memory
 - Can be used from the start, does not require longitudinal relationship
- Challenges:
 - Sometimes focused on overly specialized knowledge (i.e., teacher's favorite topic)
- Suggestions:
 - Probe understanding with easier questions first → increasingly challenging questions
 - Safe learning environment essential
 - Fill in knowledge gaps or encourage learners to look up what they don't know (and be sure to follow up the next day)

Reflection

- Teacher prompts students to deliberately consider their strengths and weaknesses
- Examples: “What are your strengths and weaknesses in diagnosing a patient?” “What are your strengths and weaknesses as a team leader?”

Reflection

- **Benefits:**
 - Helps learner understand strengths and weaknesses
 - Helps learner process recent experiences
- **Challenges:**
 - Used inconsistently
 - Learners do not always know how to improve upon their weaknesses
- **Suggestions:**
 - Ask for learners' reflections more often and then provide suggestions to reinforce strengths and improve weaknesses

Exploration

- Teacher encourages students to set and pursue personal learning goals
- Should be self-directed and guided by learners' personal strengths and weaknesses
- Example: “What is one thing you want to work on this week?”

Exploration

- **Benefits:**
 - Engages learner, focuses their learning process
 - Helps teachers identify meaningful learning experiences for individual learner
- **Challenges:**
 - Inconsistently used
 - Learners feel too busy with assignments to formulate personal learning goals
- **Suggestions:**
 - Teachers should encourage learners to regularly create and pursue personal goals

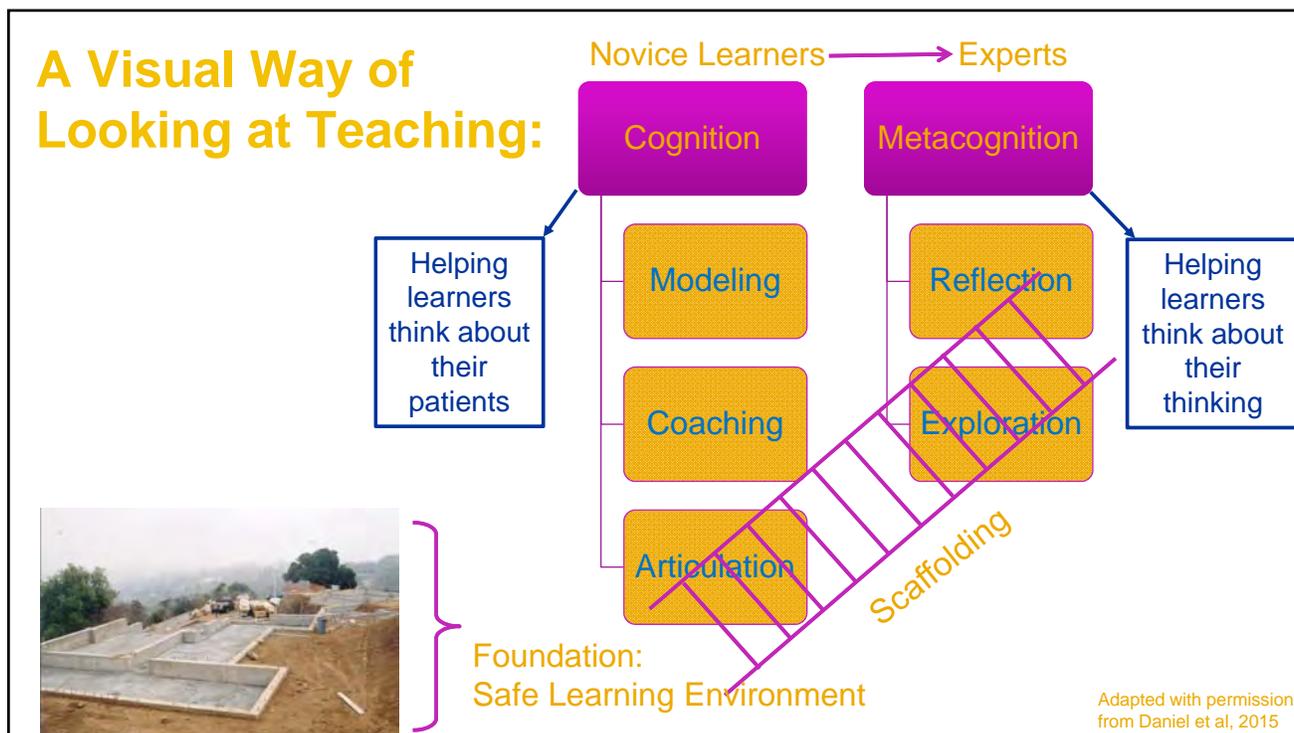
Learning Climate

- Teachers show interest in learners' education and treat learners with respect
- Essential for all methods of teaching
- **Examples:**
 - Greeting and showing enthusiasm for learners: "I'm so glad to have you as part of our team"
 - "We are all lifelong learners, so please ask questions and we can learn together"

PUTTING IT ALL TOGETHER

Putting It All Together

- How does cognitive apprenticeship relate to multilevel teaching?
- How do I apply the cognitive apprenticeship methods to teach learners of different levels?



Small Group Activity: Cases

- Please review the cases and questions in your small groups.
- Be prepared to report out to the large group at the end of the activity.

Conclusion

- The key feature of cognitive apprenticeship is making tacit thought processes explicit
- The cognitive apprenticeship model can be applied to clinical teaching through six specific methods
- A safe learning environment, modeling, and scaffolding are of fundamental importance for all learners
- Coaching and articulation are more useful for novice learners, and reflection and exploration are more useful for advanced learners

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