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

Stalmeijer, 2013

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

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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

- 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.

References