



# Making Expert Thinking Visible: Cognitive Apprenticeship in Pharmacy Education

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## BACKGROUND

- Schools of pharmacy are exploring new curriculum structures to meet increasing demands from the healthcare system and to better align with evolving roles of pharmacists.<sup>1</sup>
- Cognitive Apprenticeship (CA) theory<sup>2</sup>** describes **optimal learning environments** and provides **actionable strategies** for designing and implementing effective teaching practice to support study learning.
- Research suggests Cognitive Apprenticeship theory, which is rooted in making expert thinking visible to learners, is an effective framework for the health professions.
- However, few studies clearly describe the types of teaching activities that align with the CA framework.<sup>3</sup>

## OBJECTIVE





- The purpose of the student was to identify aspects of CA that pharmacy educators use in their teaching practice. In doing so, we aimed to described strategies for explicating experience thinking within didactic environments.

## METHODS


- Five pharmacy educators from the Eshelman School of Pharmacy provided access to to previously recorded didactic class sessions.
- A priori codes were adapted from Ahn,<sup>4</sup> who created codes based on CA dimensions and sub-dimensions.<sup>2</sup>
- Summaries for each participating pharmacy educator were crafted and an overall summary report was generated.

## RESULTS

### Cognitive Apprenticeship Dimensions & Sub-dimensions

 Content	 Methods	 Sequencing	 Sociology
<ul style="list-style-type: none"><li>Domain Knowledge*</li><li>Heuristic strategies</li><li>Control strategies<sup>0</sup></li><li>Learning strategies*</li></ul>	<ul style="list-style-type: none"><li>Modeling</li><li><b>Explanation*</b></li><li>Coaching/ Scaffolding</li><li><b>Reflection/ Articulation*</b></li><li>Exploration<sup>0</sup></li></ul>	<ul style="list-style-type: none"><li>Increasing complexity* (depth)</li><li>Increasing diversity<sup>0</sup> (breadth)</li><li>Global to local skills</li></ul>	<ul style="list-style-type: none"><li>Situated learning</li><li><b>Community of practice*</b></li><li>Collaboration*</li></ul>

Bold denotes the three most frequently used CA sub-dimensions observed in didactic class sessions. \* denotes sub-dimensions used by all participants, 0 denotes were not expressed by participants.

Most  
Prevalent  
  
Least  
Prevalent

### Faculty class sessions were characterized by four different cycles:

- Reflection/Articulation → Community of Practice → Explanation**
  - Cycle happened with and without technology
  - Served as a Formative assessment
- Reflection/Articulation → Collaboration → Community of Practice → Explanation**
  - Application, Analysis, and Evaluation of knowledge
- Community of Practice → Explanation**
  - Represented periods of time where students posed questions to faculty
  - Occurred either at the beginning of class, end of class, or after an extended Explanation segment
- Reflection/Articulation → Coaching/Scaffolding → Community of Practice → Explanation**
  - Rare, but reflected the faculty member supporting student thinking and understanding

## CONCLUSIONS

- Pharmacy education faculty constructed didactic learning environments reflective of Communities of practice, where students and faculty worked collaboratively to engage with Domain knowledge.
- CA Methods, specifically Explanation and Reflection/ Articulation, are associated with active learning strategies which support student learning.

## REFERENCES

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