Applications of adaptive expertise:

Where have you seen examples of these principles?

What applications of these principles do you see for your teaching?

Pearls on Educational Principles

Adaptive Expertise

Pearls on Educational Principles aim to:

- Present an influential idea in education
- Suggest examples of its use
- Give an opportunity to apply the idea to your teaching

Principles to Guide Teaching Practice in Medical Education

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Adaptive Expertise

as explained by
Bridget O'Brien, PhD

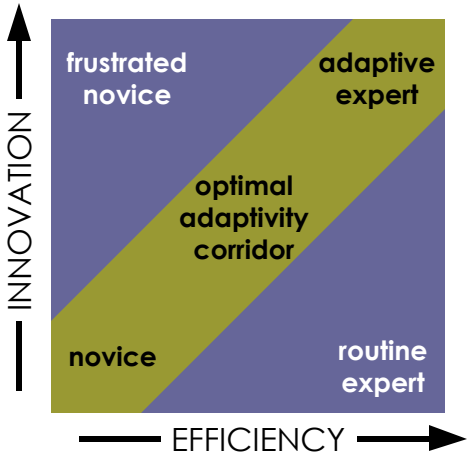
The idea:

Until recently, the literature on physician expertise concentrated on clinical reasoning, and specifically diagnostic thinking. These studies, heavily influenced by the cognitive sciences, focused on how physicians become faster and more accurate at diagnosis. The results helped us understand how physicians develop the **routine expertise** needed to perform typical aspects of their work. The Dreyfus and Dreyfus model for the development of routine expertise describes the levels through which learners progress toward greater automaticity in performing complex tasks: novice, advanced beginner, competent, proficient, and expert[1]. Competency-based education, derived from this model, requires learners to demonstrate competent performance at the end of training, and to continue toward expertise during professional practice.

Scholars such as Bransford and Hatano have proposed an additional dimension of expertise called **adaptive expertise**. In contrast to routine expertise, which relates to accuracy and efficiency, adaptive expertise focuses on innovation and creativity. The adaptive expert is one who thinks outside the box to solve challenging problems or address atypical situations. Taking this concept a step further, Bereiter and Scardamalia suggest that routine experts are not "true experts" if they fail to engage in "progressive problem solving," or the effortful thinking and strategizing that goes beyond routine problems of professional practice.[2]

The figure illustrates the relationship between routine and adaptive expertise. Historically, medical education emphasized the efficiency dimension (training for routine expertise). Current thinking suggests that education should consider outcomes related to innovation (training for adaptive expertise), as much as those connected with efficiency. Recent efforts in quality and safety improvement and interprofessional teamwork offer opportunities to incorporate the innovation dimension and move toward optimal balance between the two.

Figure 1: Two dimensions of expertise.[3]



The examples:

- **Quality, safety, and performance improvement initiatives** that engage students and residents are aligned with adaptive expertise because they focus attention on identifying problems and developing novel solutions to improve practice and patient care.
- **Pathways to Discovery programs** provide an opportunity to develop adaptive expertise. Learners in these programs willingly choose to go beyond learning the basic knowledge and skills required of physicians; they learn knowledge and skills that facilitate progressive problem solving in areas ripe for discovery, advocacy, and improvement.

1. Batalden P, Leach D, Swing S, Dreyfus H, Dreyfus S. General competencies and accreditation in graduate medical education. Health Affairs. Sept 2002; 21(5): 103-111.

2. Bereiter C, Scardamalia M. (1993). *Surpassing Ourselves*. Open Court Press.

3. Figure From: Bransford J et al. Foundations and opportunities for an interdisciplinary science of learning. In: The Cambridge Handbook of the Learning Sciences. New York, NY: Cambridge University Press. Figure 2.2 p.27

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