

Dreyfus Model: Skill Acquisition

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Dreyfus Model

- Stuart and Hubert U of Calif. Berkeley, USAF contract (Dept. of Industrial Engineering and Operations Research and Dept. of Philosophy)
- Original document listed in syllabus
- Developmental model to explain how one develops a skill
 - Foreign language, learning chess, flight instruction

Underlying assumptions

- Acquire a skill through instruction and experience
- Developmental process, with 5 defined stages
- Based their analysis on careful descriptions of skill acquisition
- As the student becomes skilled, he depends less on abstract principles and more on concrete experience

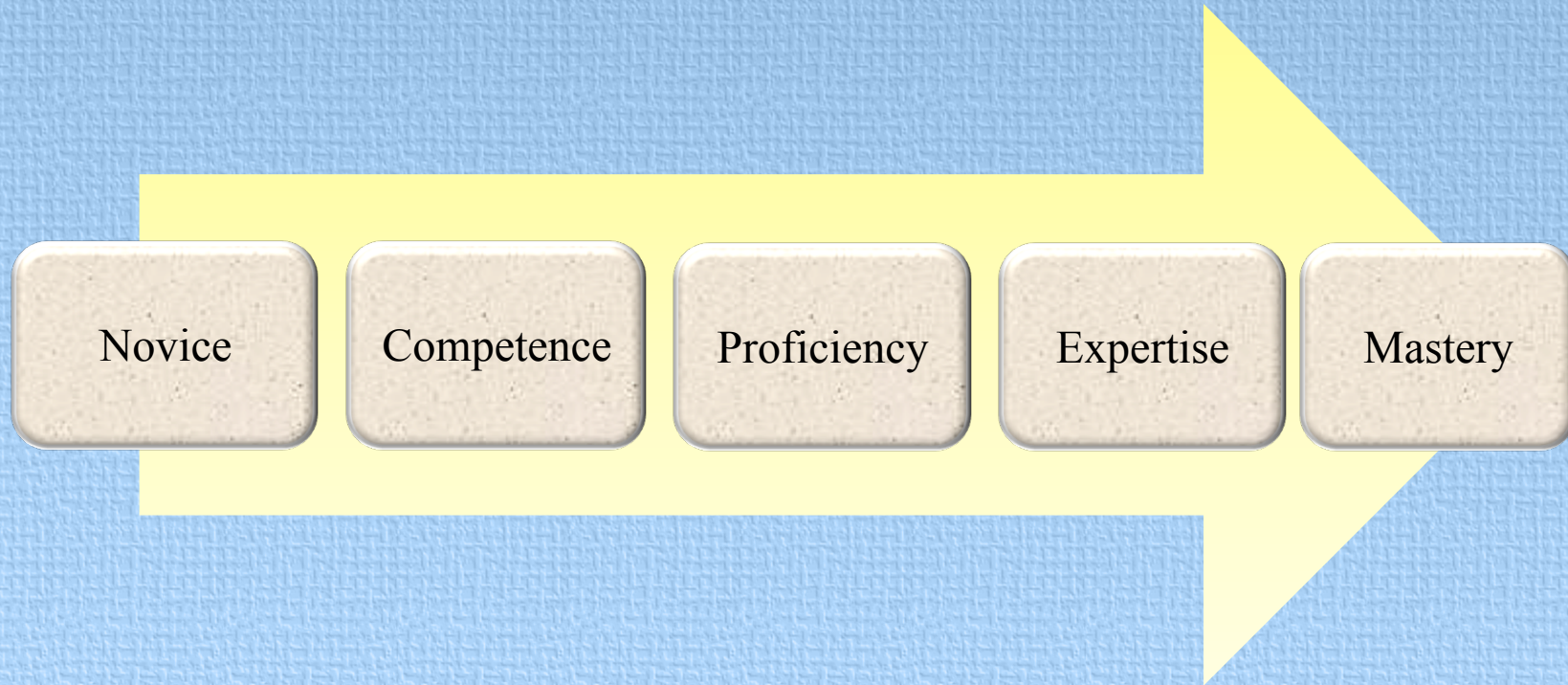
- Shift from controlled processing
 - Requiring attention
 - Not as proficient or skilled
- Towards automatic processing
 - Requires less cognitive attention
 - Easily completes the task
- As you shift towards automatic processing, your performance improves, and you free up attention to engage in a parallel task



 [Randen Pederson](#)

- Concrete experience is required to attain higher levels of performance
- Abstraction actually makes the task harder to perform
- Training programs and materials should support learner through the stages

Dreyfus' Model



Mental models for skill acquisition

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
NOVICE	COMPETENCE	PROFICIENCY	EXPERTISE	MASTERY
<ul style="list-style-type: none">▪ Task has context free features▪ Non-situational▪ General rules or principles▪ Requires monitoring	<ul style="list-style-type: none">▪ Situational components▪ Aspect recognition (recurrent patterns)▪ Guidelines for action	<ul style="list-style-type: none">• Exposed to whole• “Maxims” or memorized principles• Judges importance of salient aspects	<ul style="list-style-type: none">▪ Intuitive appropriate actions▪ Uses rules, guidelines, maxims▪ Appropriate responses to context	<ul style="list-style-type: none">▪ Automaticity▪ Intuitive response▪ Minimal mental effort required▪ “In the zone”

Dreyfus and Dreyfus, 1980.

Transitions

“The designer of training aids and courses must at all times **be aware of the developmental stage of the student**, so as to facilitate the trainee's advancement to the next stage, and to avoid the temptation to introduce intricate and sophisticated aids which, although they might improve performance at a particular level, would impede advancement to a higher stage, or even encourage regression to a lower one.”

Dreyfus and Dreyfus, 1980.