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Stages of Skill Acquisition

By Dr Daniel Belton, University of Huddersfield, 26th July 2015

The Dreyfus and Dreyfus five stage model for skills acquisition was originally introduced in 1980 understand skill development of aircraft pilots but has since been developed further [1]. It has since been reapplied and reimagined for other fields, including nursing and software development [2, 3]. It is suggested that someone can develop new skills by passing through five stages of development, from having no prior experience as a 'novice' through to becoming an 'expert' via the 'advanced beginner', 'competent' and 'proficient' stages.

Complementary to this model is the idea that expertise can be developed through deliberate practice [4]. This involves working on a well-defined task. The task needs to be appropriately difficult (challenging but doable). The learning environment needs to be informative, providing feedback that can be acted upon. The learning environment also needs to provide opportunities for repetition. This allows skills and expertise to be reinforced and for any actions, corrected by feedback, to be retried and tested.

According to Hunt [2], common characteristics for each stage of skill development are as follows¹:

Novices¹:

- "Have little or no previous experience."
- "Are concerned about their ability to succeed."
- "Don't know if actions will achieved the desired outcome."
- "Don't particularly want to learn but just want to accomplish an immediate goal."
- "Don't know how to respond to mistakes."
- "Are vulnerable to confusion when things go wrong."
- "Can be effective if given context free rules to follow (i.e. the rules can be followed and should work irrespective of what is going on in the situation)."
- "Do not know which rules are most relevant in a given situation."
- "Cannot handle something unexpected."

Advanced Beginners¹:

- "Can start to break away from rigid rules to some extent."
- "Can try tasks on their own."
- "Still have difficulty troubleshooting."
- "Want new information fast."
- "Don't want to be bogged down with lengthy theory."
- "Don't want to be spoon-fed basics again."
- "Can start to using advice in the correct context."
- "Can start formulating some overall principles."
- "Do not see the "big picture" yet and have no holistic understanding yet."
- "If you tried to force the wider context on the advanced beginner they would probably dismiss it as irrelevant."

At the **Competent** stage¹:

- "People can develop conceptual models of the problem."
- "They can troubleshoot problems on their own."

¹ These comments have been quoted and/or paraphrased from the original source [2].

- “They can begin to solve novel problems.”
- “They can begin to seek out and apply advice from experts and use it effectively.”
- “Work is based on deliberate planning and past experience.”
- “Still have trouble trying to determine which details to focus on when problem solving.”
- “Are typically describe as ‘having initiative’ and being ‘resourceful’.”
- “They can mentor novices.”
- “Don’t ‘annoy’ experts too much.”
- “Cannot apply agile methods.”
- “Do not have the capacity for reflection and self-correction.”

At the **Proficient** stage¹:

- “People need the big picture.”
- “They seek out and want to understand the larger conceptual framework around the skill.”
- “They become frustrated by oversimplified information.”
- “They can correct previous poor task performance.”
- “They can reflect on how they have done and revise their approach to perform better next time.”
- “They can learn from the experience of others.”
- “They can read case studies, listen to others, look at failed projects and learn from the story even if they did not participate in the experience first-hand.”
- “They can understand and apply maxims (general principles) in the correct context.”
- “Understanding context is key to becoming an expert.”
- “They know from experience what is likely to happen next.”
- “If things don’t work out they know what to do next.”
- “They can use reflection and feedback to apply agile methods.”

Experts¹:

- “Are the primary sources of knowledge and information in any field.”
- “They continually look for better methods and better ways of doing things.”
- “They have a vast body of experience they can tap into and apply in just the right context.”
- “They work from intuition not from reason.”
- “They may not be able to articulate how they arrived at a conclusion.”
- “They know the difference between irrelevant details and the very important details.”
- “They know which details should be focused on and which details can be safely ignored.”
- “They may not be actively conscious of judgements they are making.”
- “They are very good at targeted, focused pattern matching.”

References

1. Dreyfus, S. E. (2004). The five-stage model of adult skill acquisition. *Bulletin of science, technology & society*, 24(3), 177-181.
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