Novice to Expert: the Dreyfus model of skill acquisition

Introduction

This document contains two versions of the Dreyfus 'novice to expert' model, one combining the main features of both versions of the model published in the early 1980s, and the other taken from the Institute of Conservation's professional standards.

The Dreyfus model is used fairly widely (a) to provide a means of assessing and supporting progress in the development of skills or competencies, and (b) to provide a definition of acceptable level for the assessment of competence or capability.

The 'expert' level does not signify that development stops, as expert practitioners need to evaluate their practice and keep up-to-date with new evidence.

Further reading

Dreyfus, H L and Dreyfus, S E (1986) *Mind over Machine: the power of human intuition and expertise in the age of the computer*, Oxford, Basil Blackwell

Benner, P (1984) *From novice to expert: excellence and power in clinical nursing practice*, Menlo Park CA, Addison-Wesley

Introduction and adaptations of the Dreyfus model by Stan Lester. If you wish to use extracts from this document, please reference the URL as well as including a reference to the original source materials.

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Document located at
http://www.sld.demon.co.uk/dreyfus.pdf

Novice-to-Expert summary

Novice

Has an incomplete understanding, approaches tasks mechanistically and needs supervision to complete them.

Advanced Beginner

Has a working understanding, tends to see actions as a series of steps, can complete simpler tasks without supervision.

Competent

Has a good working and background understanding, sees actions at least partly in context, able to complete work independently to a standard that is acceptable though it may lack refinement.

Proficient

Has a deep understanding, sees actions holistically, can achieve a high standard routinely.

Expert

Has an authoritative or deep holistic understanding, deals with routine matters intuitively, able to go beyond existing interpretations, achieves excellence with ease.

Novice-to-Expert scale (1)

<table>
<tr><th>Level</th><th>Stage</th><th>Characteristics</th><th>How know-ledge etc is treated</th><th>Recognition of relevance</th><th>How context is assessed</th><th>Decision-making</th></tr>
<tr><td>1</td><td>Novice</td><td>Rigid adherence to taught rules or plans
Little situational perception
No discretionary judgement</td><td>Without reference to context</td><td rowspan="2">None</td><td rowspan="2">Analytically</td><td rowspan="3">Rational</td></tr>
<tr><td>2</td><td>Advanced beginner</td><td>Guidelines for action based on attributes or aspects (aspects are global characteristics of situations recognisable only after some prior experience)
Situational perception still limited
All attributes and aspects are treated separately and given equal importance</td><td rowspan="3">In context</td></tr>
<tr><td>3</td><td>Competent</td><td>Coping with crowdedness
Now sees actions at least partially in terms of longer-term goals
Conscious, deliberate planning
Standardised and routinised procedures</td><td rowspan="3">Present</td></tr>
<tr><td>4</td><td>Proficient</td><td>Sees situations holistically rather than in terms of aspects
Sees what is most important in a situation
Perceives deviations from the normal pattern
Decision-making less laboured
Uses maxims for guidance, whose meanings vary according to the situation</td><td rowspan="2">Holistically</td></tr>
<tr><td>5</td><td>Expert</td><td>No longer relies on rules, guidelines or maxims
Intuitive grasp of situations based on deep tacit understanding
Analytic approaches used only in novel situations or when problems occur
Vision of what is possible</td><td>Intuitive</td></tr>
</table>

Adapted from: Dreyfus, S E (1981) *Four models v human situational understanding: inherent limitations on the modelling of business expertise* USAF Office of Scientific Research, ref F49620-79-C-0063; Dreyfus, H L & Dreyfus, S E (1984) "Putting computers in their proper place: analysis versus intuition in the classroom," in D Sloan (ed) *The computer in education: a critical perspective* Columbia NY, Teachers' College Press.

Novice-to-Expert scale (2)

	Knowledge	Standard of work	Autonomy	Coping with complexity	Perception of context
1. Novice	Minimal, or 'textbook' knowledge without connecting it to practice	Unlikely to be satisfactory unless closely supervised	Needs close supervision or instruction	Little or no conception of dealing with complexity	Tends to see actions in isolation
2. Beginner	Working knowledge of key aspects of practice	Straightforward tasks likely to be completed to an acceptable standard	Able to achieve some steps using own judgement, but supervision needed for overall task	Appreciates complex situations but only able to achieve partial resolution	Sees actions as a series of steps
3. Competent	Good working and background knowledge of area of practice	Fit for purpose, though may lack refinement	Able to achieve most tasks using own judgement	Copes with complex situations through deliberate analysis and planning	Sees actions at least partly in terms of longer-term goals
4. Proficient	Depth of understanding of discipline and area of practice	Fully acceptable standard achieved routinely	Able to take full responsibility for own work (and that of others where applicable)	Deals with complex situations holistically, decision-making more confident	Sees overall 'picture' and how individual actions fit within it
5. Expert	Authoritative knowledge of discipline and deep tacit understanding across area of practice	Excellence achieved with relative ease	Able to take responsibility for going beyond existing standards and creating own interpretations	Holistic grasp of complex situations, moves between intuitive and analytical approaches with ease	Sees overall 'picture' and alternative approaches; vision of what may be possible

From the professional standards for conservation, Institute of Conservation (London) 2003 based on the Dreyfus model of skill acquisition.

Characteristics associated with each stage...

Novice	Apprentice	Practitioner	Expert
* Concrete * Literal * Needs constant guidance * Seeks affirmation regularly	* Begins to make connections * Begins to apply skills * Seeks affirmation after completion	* Manipulates multiple concepts * Able to synthesize and generalize * Metacognition	* Able to evaluate and create * Self-directed * Looks for new learning opportunities

What students need at each stage...

Novice	Apprentice	Practitioner	Expert
* Step-by-step directions * Scaffolding * Frequent feedback * Structured practice	* Group work * Application * Self-evaluation * Inquiry/research	* More significant concepts * Open inquiry * More resources * More problem solving	* Transdisciplinary challenges *self-directed projects * Collaboration * Innovation

Novice to Expert scale

	Knowledge	**Standard of work**	**Autonomy**	**Coping with complexity**	**Perception of context**
1 Novice	Minimal, or 'textbook' knowledge unrelated to practice	Unlikely to be satisfactory unless closely supervised	Needs close supervision or instruction	Little or no conception of dealing with complexity	Tends to see actions in isolation
2 Beginner	Working knowledge of key aspects of practice	Straightforward tasks likely to be completed to an acceptable standard	Able to achieve some steps using own judgement, but supervision needed for overall task	Appreciates complex situations but only able to achieve partial resolution	Sees actions as a series of steps
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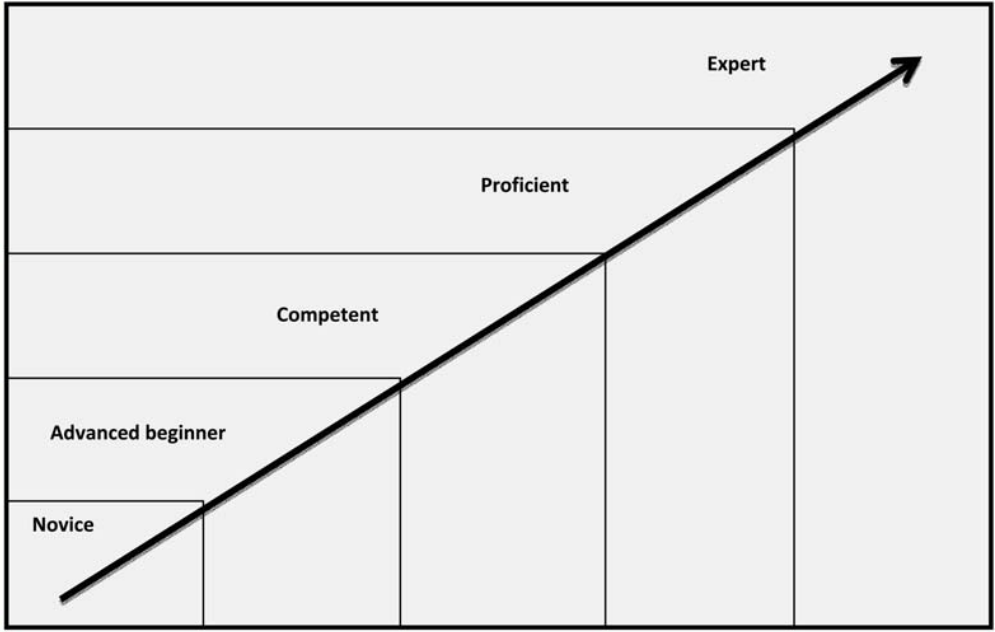
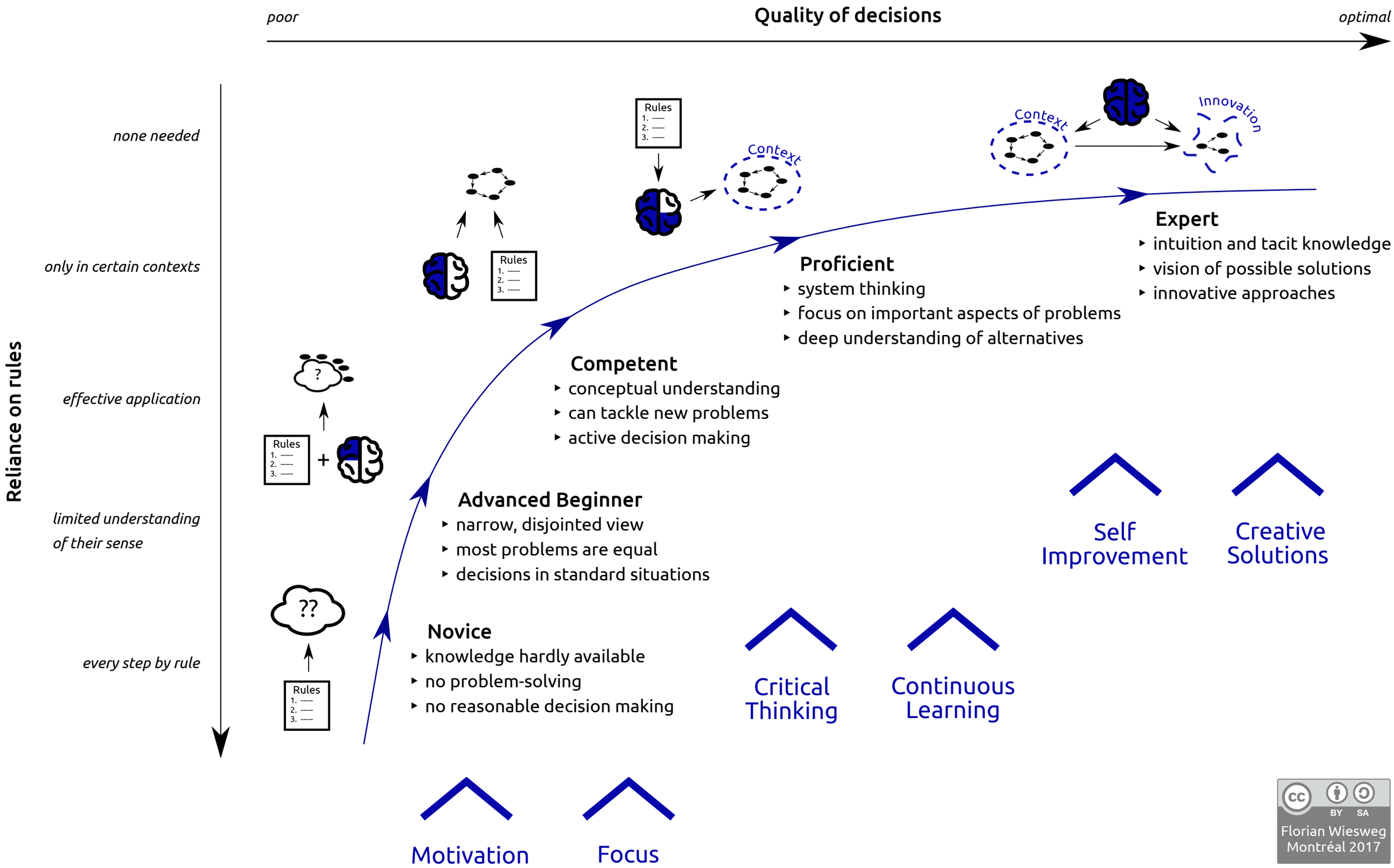
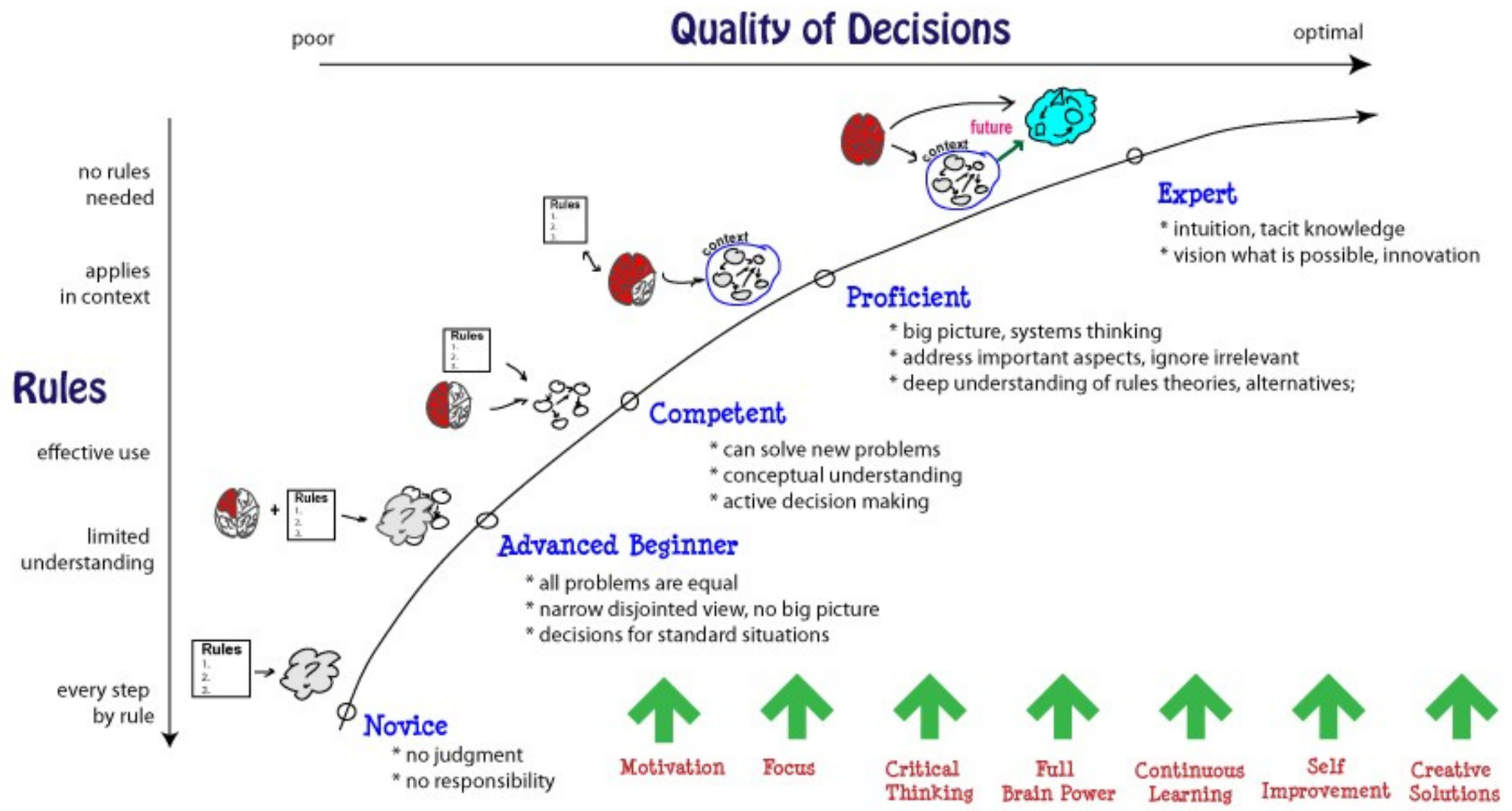
Adapted from the Dreyfus model of skills acquisition: Dreyfus, S E (1981) and Dreyfus, H L & Dreyfus, S E (1984).

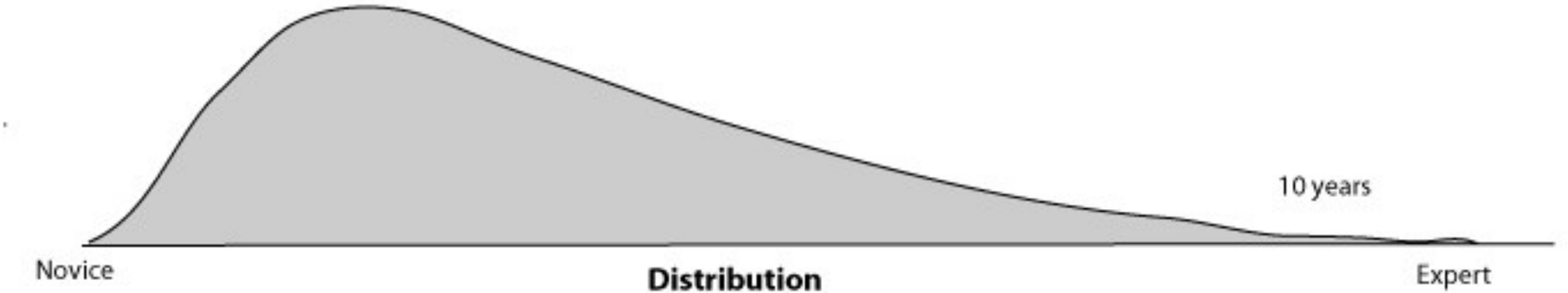
Responsibility extends to others and the environment					
Sense of responsibility increases with experience					
Sense of responsibility arises from actively making decisions					
Still does not experience personal responsibility					
Only feels responsible to follow the rules					
Scope of vision & Range of capability	Follows specific rules for specific situations. Rules are not conditional. "Only capable of following the rules"	Begins to create and identify conditional rules. "Rules have nuance and become conditional in nature"	Learns organizing principals. Information sorting by relevance begins "Higher order rules shape contexts and conditions"	Uses pattern recognition to assess what to do. Uses rules to determine how to do it "Intuition aides in identifying the situation; the actions are governed by the principals"	No analysis or planning. Pattern recognition extends to plan as well as action "Just does what works"

Dreyfus model of skill acquisition

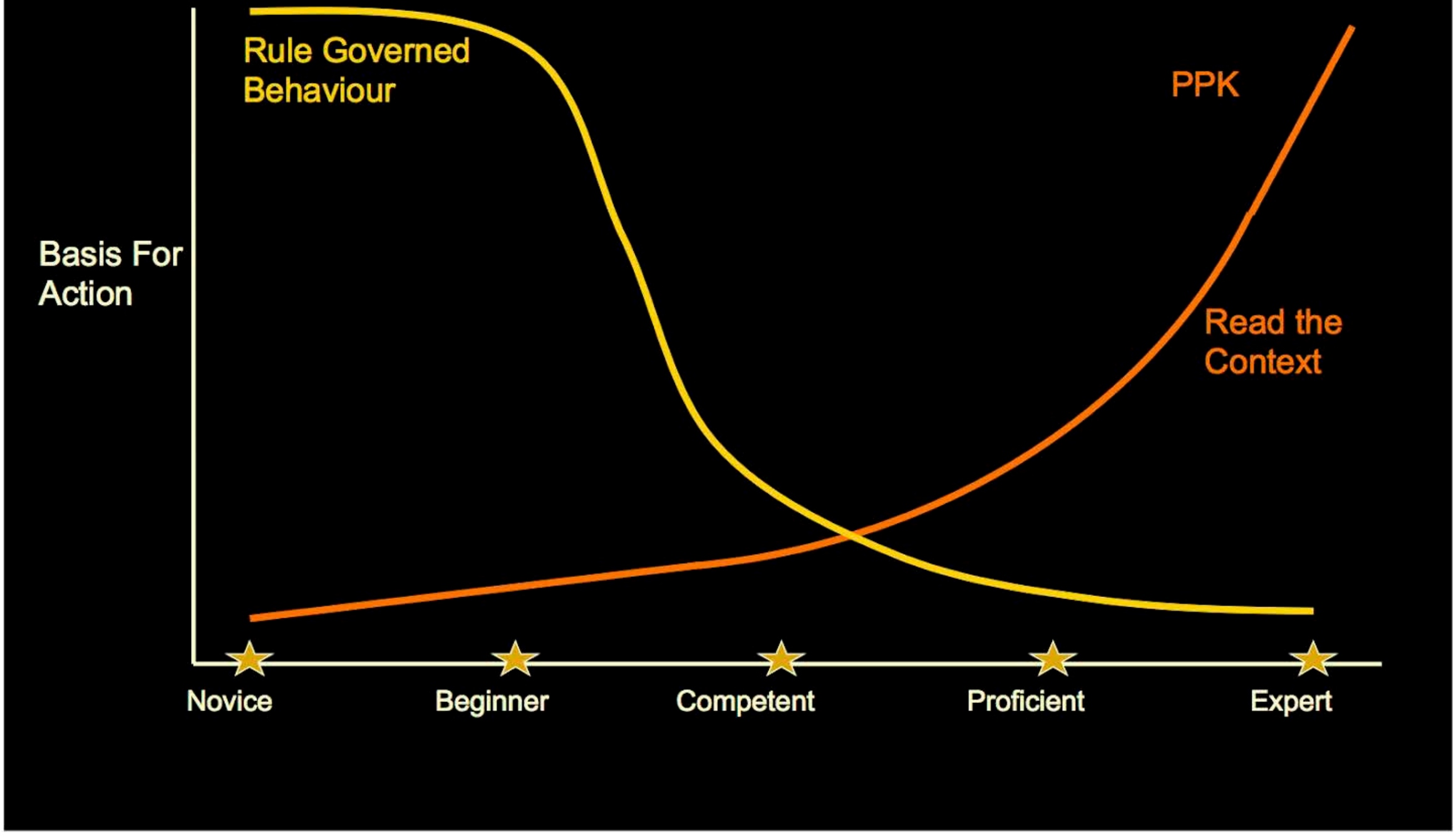


Genesis of The Expert





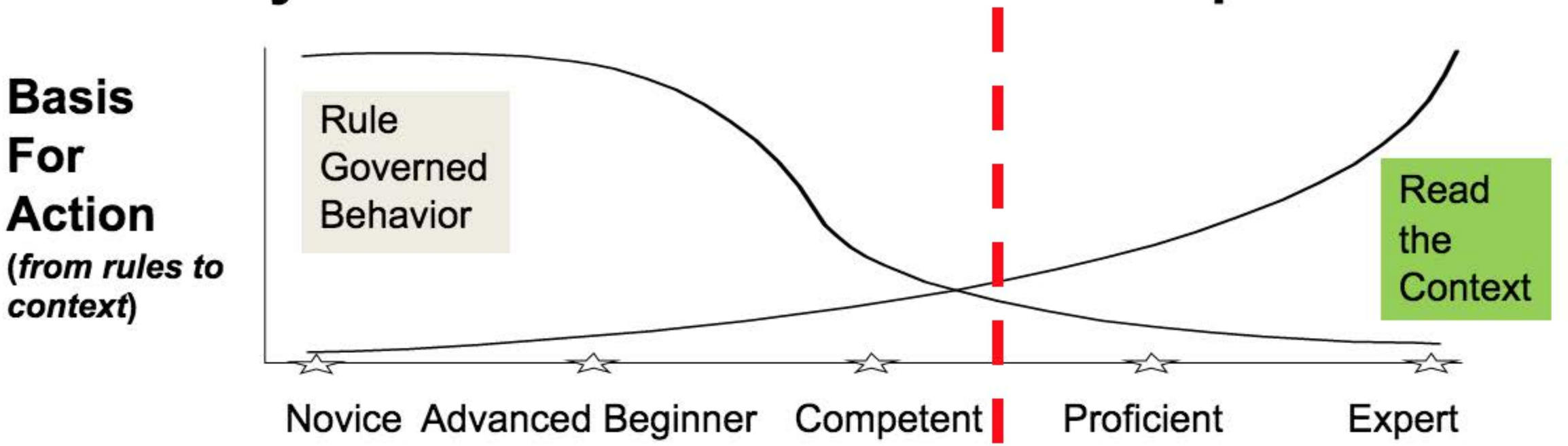
The Dreyfus Model



COACH DEVELOPER
TRAINING PROGRAMME

SPORT NEW ZEALAND

Dreyfus Model of Skill Acquisition



Abstract → Concrete

Parts → Whole (& patterns)

Everything's important → Critical few

Little judgment → Own judgment

Deliberate support → Self-determined as-needed support

Want 'the right way' → No one 'right way'

Note: 'The Novice performer' not 'The Novice'. You can be novice at some aspects of complex tasks (e.g coaching), competent at others, and expert in others.

Source: Dr John Edwards, Edwards Exploration

Dreyfus model of skill acquisition

Novice

- needs recipes
- follows rules
- no the big picture
- no context

Advanced Beginner

- needs guidelines/cookbooks
- gets awareness
- seeks for quick solutions
- doesn't need the big picture
- doesn't feel as a part of the system

Competence

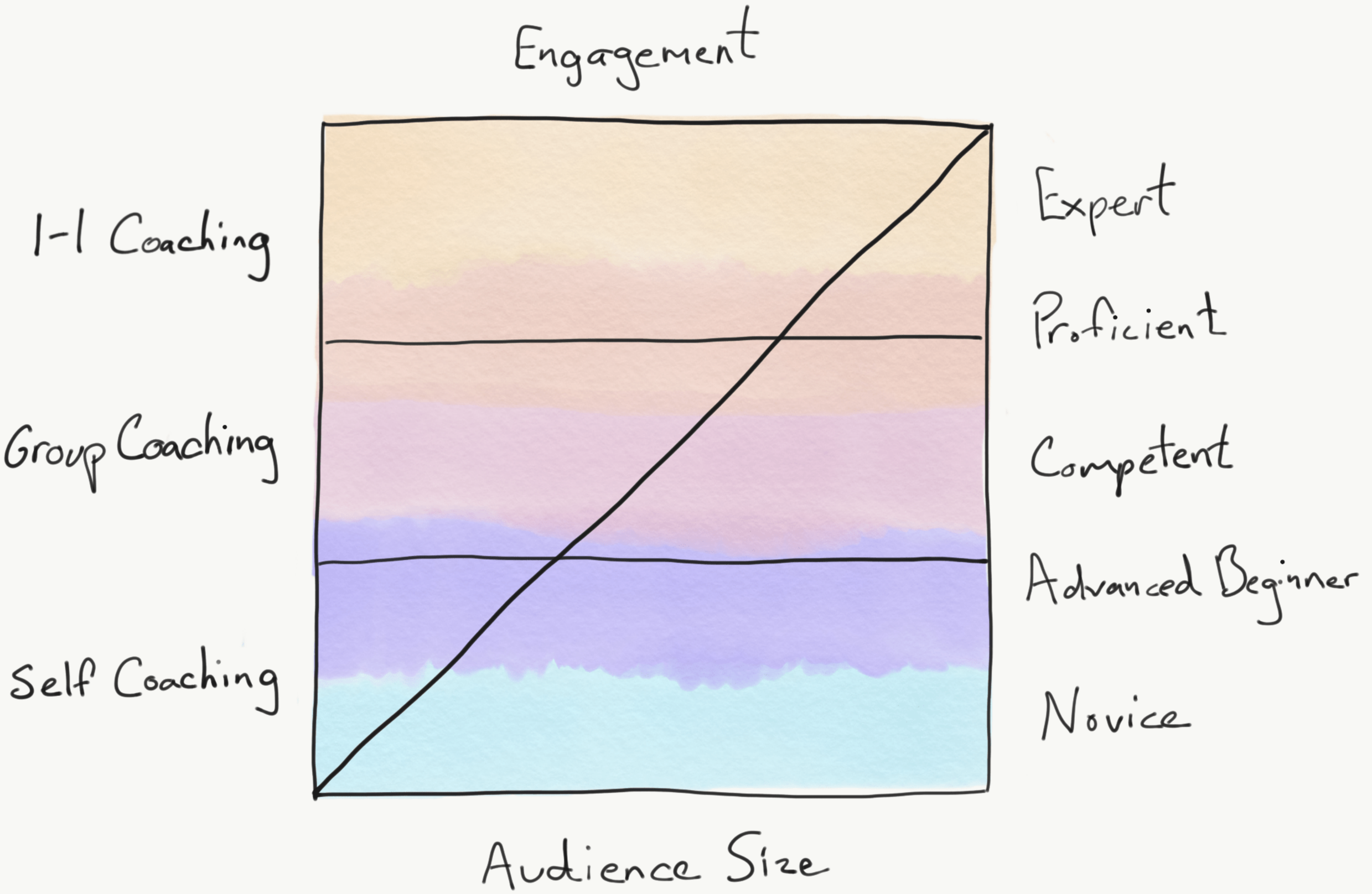
- needs maxims (principles)
- can troubleshoot
- can use the advice of experts
- can find a problem
- still hard to distinguish the important details
- still has to check many options until finds out the valuable one
- most people stuck at this stage

Proficient

- needs patterns
- needs the big picture
- can self-correct
- can learn from other's experience
- can apply recipes in the context

Expert

- no longer needs principles
- responds intuitively and appropriately to the current situation
- best in patterns matching
- almost instantaneously sees important details and produces actions
- feels like a part of the system (rather than controls it)
- can apply best practices just in the right context


Engagement
1-1 Coaching
Group Coaching
Self Coaching
Expert
Proficient
Competent
Advanced Beginner
Novice
Audience Size

Fledgling	Beginner	Intermediate	Advanced	Extreme	Expert
					
Very Low Intensity	**Low Intensity**	**Moderate Intensity**	**Strenuous Intensity**	**Vigorous Intensity**	**Prolonged Intensity**
CHILDREN'S ACTIVITY	NO EXPERIENCE NECCESSARY	EXPERIENCE RECOMMENDED	EXPERIENCE RECOMMENDED	EXPERIENCE RECOMMENDED	EXPERIENCE REQUIRED
Great for children.	First timers welcome.	Some physical ability required.	Need agility, good balance & strength.	Need agility, good balance, strength & physical stamina..	Great physical strength & athletic ability.

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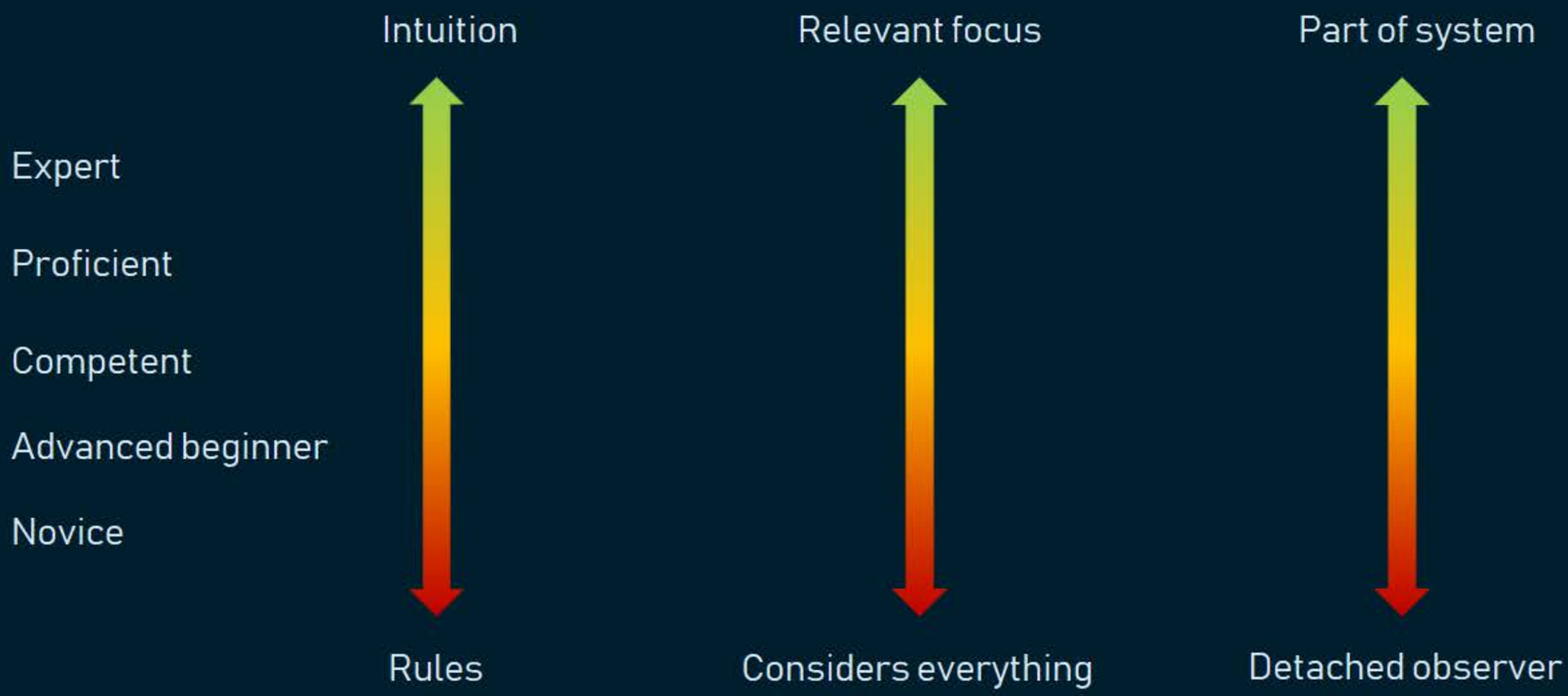
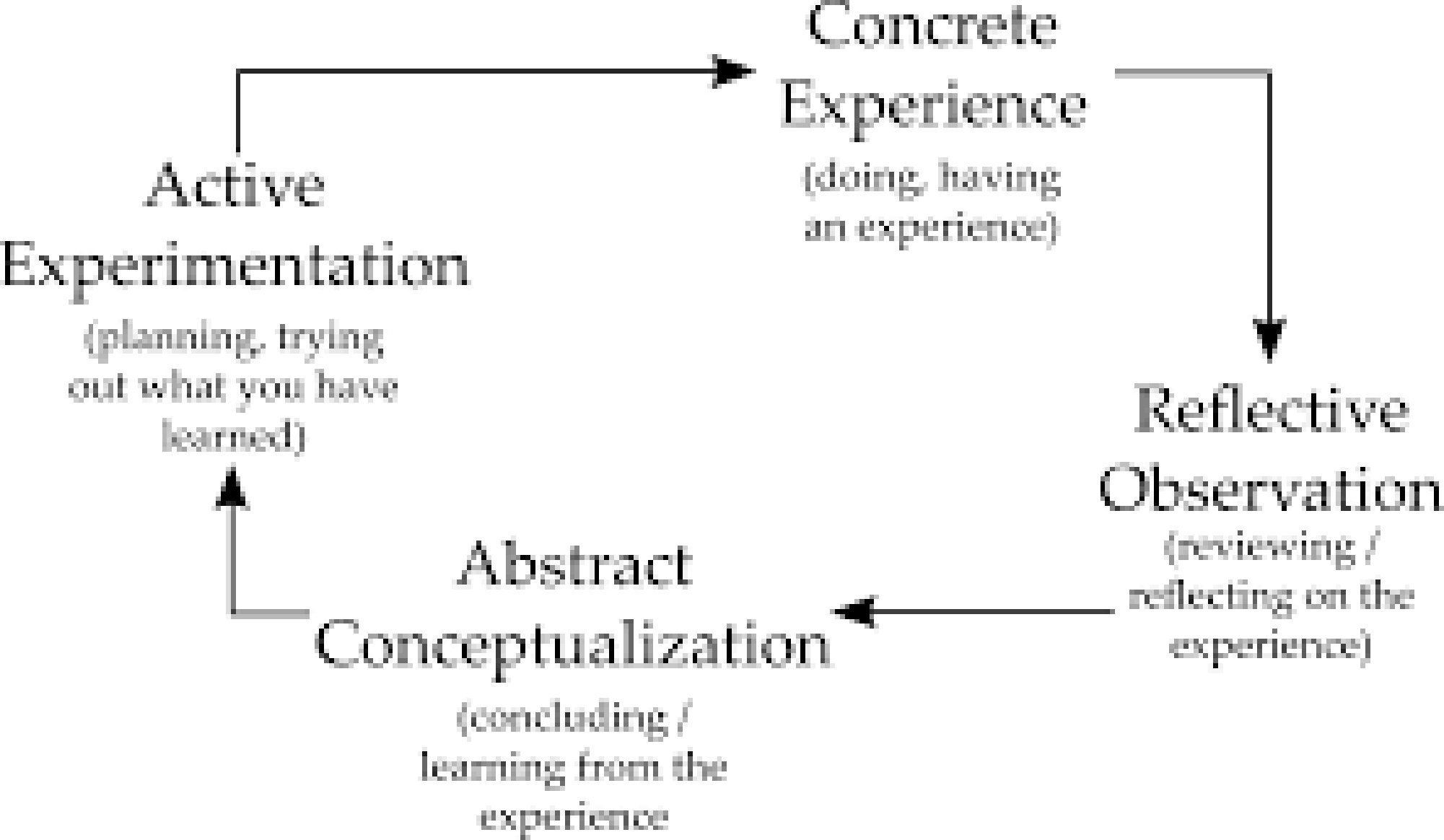
DREYFUS MODEL: NOVICE TO EXPERT DYNAMICS




Concrete Experience
(doing, having an experience)
Reflective Observation
(reviewing / reflecting on the experience)
Abstract Conceptualization
(concluding / learning from the experience
Active Experimentation
(planning, trying out what you have learned)

DREYFUS MODEL OF SKILL ACQUISITION

Novice

Advanced Beginner

Competent

Proficient

Expert