

AI-04719 Dreyfus Model of Skill Acquisition

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What is Drefus and Drefus Developmental model? Explain, list the pillars, list 22 examples What it means? Deep dive and provide the psychological pillars. Describe how a person typically thinks, behaves, and makes decisions. Provide 22 concrete examples demonstrating these traits in real-life situations. Then create a 22-point guidelines from the discussion.

The Dreyfus Model of Skill Acquisition

You mean the **Dreyfus Model of Skill Acquisition**, developed by brothers **Stuart Dreyfus and Hubert Dreyfus**. It explains how people develop practical expertise—from following rules as beginners to making sophisticated, largely intuitive judgments as experts.

The model is especially useful for understanding **professional training, apprenticeship, technical work, medicine, aviation, engineering, military operations, and leadership**.

Central idea: Expertise is not merely knowing more facts. It is learning to recognize meaningful situations, understand context, prioritize what matters, and act appropriately without having to consciously calculate every step.

1. What is the Dreyfus Developmental Model?

The original model, introduced in the 1980s, describes **five stages of skill development**:

Stage	Primary orientation	How the person approaches work
1. Novice	Rules and objective features	"Tell me the steps."
2. Advanced Beginner	Situational aspects	"I recognize some recurring situations."
3. Competent	Goals, planning, prioritization	"I can organize and manage this."
4. Proficient	The whole situation	"I can see what is developing."
5. Expert	Intuitive grasp and fluid action	"I recognize what is happening and know how to respond."

Important clarification

The model is **not simply a five-level IQ scale**, a personality test, or a guarantee that someone progresses automatically with years of experience.

A person can be:

- Expert in one domain and novice in another.
- Highly knowledgeable but practically inexperienced.
- Competent in routine conditions but inexperienced during emergencies.
- Proficient technically but weak in communication or judgment.
- Experienced for 20 years—or have one year of experience repeated 20 times.

Expertise is domain-specific and demonstrated through performance.

2. The Five Stages: Deep Dive

Stage 1 — Novice

Definition

The novice has little or no experience in the specific situation. They rely on **context-free rules, procedures, definitions, and explicit instructions**.

The novice does not yet know which details matter most.

Psychological orientation

“What am I supposed to do, and what rule applies?”

How a novice typically thinks

- Sees individual tasks rather than the entire system.
- Treats instructions as equally important.
- Relies heavily on checklists and demonstrations.
- Has difficulty distinguishing critical signals from normal variation.
- May follow a correct procedure in an inappropriate context.
- Often needs feedback after each step.

How a novice behaves

- Asks frequent clarification questions.
- Performs slowly and deliberately.
- Checks instructions repeatedly.
- May freeze when something unexpected happens.
- Tends to escalate uncertainty rather than improvise.
- Can be very safe when procedures are clear.

How a novice makes decisions

Rule → Match situation → Execute → Verify

Decision example:

“The pressure is outside the specified range. The procedure says to stop and notify the supervisor, so I will do that.”

Strengths

- Willingness to learn.
- Procedural discipline.
- Low assumption-making.
- Often receptive to correction.
- Can perform reliably in narrowly defined tasks.

Risks

- Rigid rule application.
- Overdependence on supervision.
- Failure to recognize subtle warning signs.
- Confusion when multiple rules conflict.
- Mistaking completion of a procedure for successful completion of the mission.

Stage 2 — Advanced Beginner

Definition

The advanced beginner has encountered enough real situations to recognize **recurring patterns and situational cues**, but still lacks a fully developed understanding of the broader context.

They begin to move beyond abstract rules.

Psychological orientation

“I have seen something like this before.”

How they think

- Recognize common symptoms, patterns, and exceptions.
- Begin connecting textbook knowledge to real events.
- Notice more relevant details than a novice.
- Still struggle to determine which details deserve priority.
- May accumulate “tips” without understanding the underlying system.

How they behave

- Need less step-by-step instruction.
- Ask more targeted questions.
- Can complete familiar tasks with limited supervision.
- May imitate experienced workers.
- Sometimes overgeneralize from a previous experience.

How they make decisions

Recognize pattern → Recall similar case → Apply known response → Seek confirmation

Decision example:

“This sounds like the issue I saw last week. I’ll check the same conditions first, but I’ll confirm before making a change.”

Strengths

- Growing pattern recognition.
- Better practical awareness.
- Increasing independence.
- More efficient performance in familiar conditions.

Risks

- “I have seen this before” bias.
- Premature diagnosis.
- Overconfidence in partial pattern recognition.
- Confusing correlation with cause.
- Applying a successful past solution to a different problem.

Stage 3 — Competent

Definition

The competent performer can **plan, prioritize, organize, and manage work intentionally**. They understand enough of the domain to make decisions about competing demands.

Competence is not mediocrity. In this model, it is a significant stage of reliable professional functioning.

Psychological orientation

“What is the goal, what matters most, and how should I organize the work?”

How they think

- See tasks in relation to objectives.
- Establish priorities.
- Anticipate consequences.
- Compare alternatives.
- Build plans and contingency plans.
- Take responsibility for outcomes.
- Begin thinking in terms of systems rather than isolated steps.

How they behave

- Work independently on familiar responsibilities.
- Organize time, tools, resources, and people.
- Recognize when escalation is necessary.
- Can explain their reasoning.
- Handle multiple tasks with deliberate prioritization.
- Begin mentoring less experienced colleagues.

How they make decisions

Assess situation → Define goal → Prioritize → Plan → Execute → Evaluate

Decision example:

“We have three issues, but one threatens product quality. I’ll stabilize that first, assign the routine task to another technician, and document the remaining issue.”

Strengths

- Reliable planning.
- Accountability.
- Effective prioritization.
- Better resource management.
- More consistent independent performance.

Risks

- Excessive planning.
- Overreliance on analytical decision-making.
- Difficulty adapting when the situation changes rapidly.
- Becoming attached to the plan.
- Managing activities efficiently without fully understanding the deeper meaning of events.

Stage 4 — Proficient

Definition

The proficient performer begins to understand situations **holistically** rather than as a collection of separate facts.

They recognize what is important because they have experienced enough situations to see how details fit together.

Psychological orientation

“What is really happening here, and where is this situation heading?”

How they think

- See the overall situation before focusing on individual details.
- Recognize deviations from normal.
- Notice relationships among multiple variables.
- Anticipate likely developments.
- Use experience to identify what deserves attention.
- Understand that the same symptom may have different meanings in different contexts.

How they behave

- Adjust plans as conditions change.
- Detect emerging problems earlier.
- Ask higher-quality diagnostic questions.
- Focus attention on the most consequential variables.
- Coach others through reasoning rather than merely giving instructions.
- Often appear calm because they recognize the structure of the situation.

How they make decisions

Holistic perception → Identify salient deviation → Interpret context → Adjust action → Monitor trajectory

Decision example:

“The equipment readings are technically within limits, but the combination of rising temperature, unusual vibration, and recent maintenance suggests a developing issue. We should investigate before it becomes a failure.”

Strengths

- Strong situational awareness.
- Better anticipation.
- Flexible planning.
- Improved prioritization under uncertainty.
- More effective diagnosis.

Risks

- Difficulty explaining intuitive judgments.
- Overconfidence in experience.
- Selective attention based on familiar patterns.
- Potentially dismissing unusual situations as “probably nothing.”
- Expertise becoming outdated when technology or conditions change.

Stage 5 — Expert

Definition

The expert has an extensive, deeply integrated understanding of the domain. They often recognize situations **without consciously comparing every detail against a formal rule**.

Their response is not random instinct. It is **experience-based, context-sensitive recognition**, usually supported by extensive mental models.

Psychological orientation

“I recognize the significance of this situation and can respond appropriately.”

How they think

- Perceive meaningful patterns rapidly.
- Distinguish signal from noise.
- Recognize what is abnormal before they can fully verbalize why.
- Use rules when needed but are not dependent on them.
- Adapt actions to the specific context.
- Think in terms of consequences, trajectories, and system behavior.
- Can shift between intuition and analysis when the situation demands it.

How they behave

- Act fluidly in familiar situations.
- Require fewer explicit instructions.
- Anticipate problems before they become obvious.
- Make rapid, high-quality judgments under pressure.
- Know when to slow down and verify.
- Teach principles, not merely procedures.
- Often simplify complex situations for others.

How they make decisions

Recognize → Interpret → Act → Verify → Adapt

Decision example:

“This pattern is not consistent with a routine alarm. The timing, equipment behavior, and recent process change suggest a common underlying cause. I’ll stabilize the system, verify the hypothesis, and escalate if the evidence supports it.”

Strengths

- Deep situational judgment.
- Rapid pattern recognition.
- Flexible action.
- Anticipatory thinking.
- Efficient use of attention.
- High-quality performance in familiar domains.

Risks

- Intuition can be wrong.
- Expertise can become complacency.
- Experts may skip explanations or assume others see what they see.
- Novel situations can expose limits.

- Authority can discourage junior people from challenging a decision.
- Experts may struggle to teach the tacit parts of their skill.

Critical principle: Expertise should not eliminate verification. The best experts know when intuition is trustworthy—and when it must be tested.

3. The Psychological Pillars Behind the Dreyfus Model

The Dreyfus model is fundamentally about **how cognition changes with experience**. The following pillars synthesize its psychological implications with established concepts from cognitive psychology, learning science, expertise research, and human factors.

These are best understood as **psychological foundations and practical interpretations**, not an official list of “Dreyfus pillars” published as a fixed numbered framework.

Pillar 1 — Contextualization

Meaning: Knowledge becomes useful when connected to the situation in which it applies.

A novice knows:

“High temperature can indicate a problem.”

An expert knows:

“High temperature after this maintenance activity, combined with this flow pattern and this equipment behavior, may indicate a specific developing issue.”

Psychological shift: Abstract knowledge → Context-sensitive knowledge.

Pillar 2 — Pattern Recognition

Meaning: Experience builds the ability to recognize recurring configurations.

Experts do not necessarily process every detail independently. They identify meaningful patterns formed by many interacting cues.

Psychological shift: Isolated facts → Recognizable configurations.

Caution: Pattern recognition is powerful but can produce premature conclusions.

Pillar 3 — Salience Detection

Meaning: Experts learn which details deserve attention and which are background noise.

A novice may notice ten things. An expert may immediately notice the two that matter most.

Psychological shift: Equal attention to everything → Selective attention to what matters.

Pillar 4 — Situational Awareness

Meaning: The person understands:

1. What is happening now.
2. What it means.

3. What is likely to happen next.

This is often represented as:

Perception → Comprehension → Projection

Psychological shift: Observing events → Understanding system state and trajectory.

Pillar 5 — Mental Models

Meaning: Experts develop internal representations of how a system works.

A strong mental model helps someone predict:

- What should happen.
- What is abnormal.
- What may happen next.
- Which variables influence the outcome.
- Which intervention is likely to help or harm.

Psychological shift: Memorized instructions → Causal understanding.

Pillar 6 — Tacit Knowledge

Meaning: Some knowledge is difficult to fully express in written rules.

Examples:

- Recognizing that a machine “doesn't sound right.”
- Sensing that a patient is deteriorating despite borderline numbers.
- Knowing that a trainee is confused before they ask for help.
- Detecting that a team is becoming overloaded.

Tacit knowledge is not mystical. It often consists of **learned distinctions, embodied experience, and compressed recognition**.

Psychological shift: Explicit knowledge → Integrated know-how.

Pillar 7 — Deliberate Practice

Meaning: Improvement requires more than repeating an activity. It requires targeted practice, feedback, correction, and progressively difficult situations.

A person does not become an expert simply by accumulating hours.

Effective practice includes:

- Clear performance goals.
- Immediate or timely feedback.
- Repetition with variation.
- Correction of errors.
- Reflection.
- Increasing complexity.
- Supervised exposure to real conditions.

Psychological shift: Experience accumulation → Experience converted into capability.

Pillar 8 — Feedback and Error Correction

Meaning: Expertise develops when the person compares intended outcomes with actual outcomes.

Without feedback, a person can reinforce bad habits.

Psychological shift: “I did the task” → “Did the task produce the intended result?”

Pillar 9 — Progressive Autonomy

Meaning: Training should gradually transfer responsibility from instructor to learner.

A useful progression is:

Observe → Assist → Perform with supervision → Perform independently → Teach and supervise

Psychological shift: External control → Internal regulation.

Pillar 10 — Prioritization and Attention Management

Meaning: Competence includes deciding what to do first, what can wait, and what must not be missed.

Experts do not merely process information faster; they often allocate attention more intelligently.

Psychological shift: Task completion → Consequence-based prioritization.

Pillar 11 — Embodied and Perceptual Learning

Meaning: Skill is not purely intellectual. Many domains require learning through perception and action.

Examples:

- A mechanic feels abnormal resistance.
- A swimmer senses inefficient stroke timing.
- A surgeon recognizes tissue characteristics.
- A technician notices vibration or sound.
- A nurse recognizes a change in patient appearance.

Psychological shift: Knowing about the task → Perceiving and acting within the task.

Pillar 12 — Intuition Grounded in Experience

Meaning: Expert intuition is rapid judgment based on learned patterns and mental models.

It is more reliable when:

- The environment is sufficiently regular.
- Feedback is available.
- The person has substantial relevant experience.
- The situation resembles known patterns.
- The consequences are checked.

It is less reliable when:

- The environment is novel.
- Feedback is delayed or absent.
- The situation is highly random.

- Emotional pressure dominates.
- The person has little domain experience.

Psychological shift: Deliberate analysis → Rapid recognition, with verification when necessary.

Pillar 13 — Reflection and Metacognition

Meaning: Advanced performers examine their own thinking.

They ask:

- Why did I interpret the situation this way?
- What did I miss?
- Was my intuition correct?
- What assumptions influenced my decision?
- What would I do differently next time?

Psychological shift: Acting → Monitoring and improving one's own cognition.

Pillar 14 — Emotional Regulation

Meaning: Skill development also involves managing stress, frustration, uncertainty, and ego.

An emotionally regulated person is more likely to:

- Ask for help early.
- Avoid impulsive action.
- Receive feedback without defensiveness.
- Maintain attention under pressure.
- Admit uncertainty.

Psychological shift: Emotion-driven reaction → Regulated, purposeful response.

Pillar 15 — Adaptive Flexibility

Meaning: Expertise is not rigid mastery of one procedure. It is knowing when the normal procedure fits—and when the situation requires adaptation.

Psychological shift: “This is the rule” → “This is the appropriate response under these conditions.”

Pillar 16 — Calibrated Confidence

Meaning: Mature expertise involves matching confidence to evidence and experience.

A calibrated expert can say:

- “I know what this is.”
- “I have a strong hypothesis.”
- “I am uncertain.”
- “This is outside my experience.”
- “We need another specialist.”
- “Let's verify before acting.”

Psychological shift: Confidence as identity → Confidence as evidence-based judgment.

4. How Thinking Changes Across the Five Stages

The deepest value of the model is seeing the transformation in cognition.

Dimension	Novice	Advanced Beginner	Competent	Proficient	Expert
Attention	All details seem important	Notices recurring cues	Focuses on priorities	Sees meaningful relationships	Rapidly detects salient patterns
Knowledge	Explicit rules	Rules + examples	Organized procedures and plans	Integrated situational understanding	Deep, flexible mental models
Decision basis	Rule compliance	Similarity to past cases	Deliberate analysis	Holistic interpretation	Contextual recognition + judgment
Time horizon	Immediate task	Current situation	Plan and consequences	Developing trajectory	Anticipates likely outcomes
Response to surprise	Stop, ask, follow procedure	Search memory for similar case	Re-plan	Reinterpret situation	Adapt fluidly, verify as needed
Confidence	Depends on instruction	Based on familiar examples	Based on planning ability	Based on situational understanding	Based on calibrated experience
Error handling	Correct the step	Find a familiar fix	Analyze the plan	Reassess the situation	Diagnose systemically and adapt
Teaching style	Demonstrates rules	Shares tips and examples	Explains process and planning	Explains patterns and priorities	Develops judgment in others

5. Twenty-Two Concrete Examples of the Dreyfus Stages in Real Life

The following examples demonstrate how the **same type of task** can be approached differently as skill develops.

Example 1 — New CMP Technician: Equipment Alarm

Stage	Typical response
Novice	Follows the alarm-response procedure exactly and calls the trainer.
Advanced Beginner	Recognizes the alarm from previous occurrences and checks the commonly associated conditions.
Competent	Prioritizes the alarm based on product risk, stabilizes the process, and organizes troubleshooting.

Proficient	Sees the alarm alongside recent process changes and recognizes a developing pattern.
Expert	Quickly identifies the likely system-level issue, takes a safe stabilizing action, and verifies the diagnosis.

What develops: From alarm response → diagnosis → anticipation.

Example 2 — Internal Medicine: Patient with Shortness of Breath

Stage	Typical response
Novice	Follows the assessment protocol and records vital signs.
Advanced Beginner	Recognizes familiar symptom combinations and considers common causes.
Competent	Builds a differential diagnosis, prioritizes dangerous causes, and orders appropriate evaluation.
Proficient	Integrates the patient's appearance, history, trajectory, and subtle findings.
Expert	Rapidly recognizes the clinical pattern while remaining alert to atypical or dangerous alternatives.

What develops: From checklist assessment → clinical judgment.

Example 3 — Cycling: Mechanical Problem During a Ride

Stage	Typical response
Novice	Looks up how to repair the issue and follows the instructions.
Advanced Beginner	Recognizes the problem from a previous ride.
Competent	Carries tools, prioritizes the repair, and executes a planned fix.
Proficient	Detects unusual drivetrain behavior before complete failure.
Expert	Quickly distinguishes among likely causes by sound, resistance, and riding feel, then chooses the least risky intervention.

What develops: From repair procedure → mechanical diagnosis.

Example 4 — Swimming: Technique and Fatigue

Stage	Typical response
Novice	Focuses on following the prescribed stroke drills.
Advanced Beginner	Recognizes familiar fatigue patterns.
Competent	Plans pacing, breathing, and rest intervals.

Proficient	Senses inefficient stroke mechanics and adjusts before exhaustion.
Expert	Integrates breathing, body position, water feel, pace, and fatigue to regulate effort fluidly.

What develops: From performing movements → sensing and controlling performance.

Example 5 — Emergency Response: Fire Alarm

Stage	Typical response
Novice	Follows evacuation procedures.
Advanced Beginner	Recognizes common alarm scenarios.
Competent	Organizes evacuation priorities and confirms accountability.
Proficient	Understands crowd movement, hazards, and changing conditions.
Expert	Quickly interprets the situation, prioritizes life safety, and adapts to evolving risks without violating critical safety principles.

What develops: From procedural compliance → dynamic risk management.

Example 6 — Nursing: Change in Patient Condition

Stage	Typical response
Novice	Records vital signs and reports abnormal values.
Advanced Beginner	Recognizes common changes from prior cases.
Competent	Organizes assessment, intervention, and escalation.
Proficient	Notices that the patient's overall appearance and behavior are inconsistent with the numbers.
Expert	Recognizes subtle deterioration early, prioritizes action, and communicates the concern clearly.

What develops: From isolated measurements → holistic patient assessment.

Example 7 — Cloud Administration: Production Service Outage

Stage	Typical response
Novice	Follows the outage runbook.
Advanced Beginner	Recognizes common error messages and known fixes.
Competent	Establishes incident priorities, checks dependencies, and follows a recovery plan.

Proficient	Sees relationships among networking, DNS, certificates, compute, and application behavior.
Expert	Quickly identifies the most probable failure domain, limits blast radius, and leads a controlled recovery.

What develops: From runbook execution → system-level troubleshooting.

Example 8 — Driving: Hazardous Road Conditions

Stage	Typical response
Novice	Follows formal driving rules.
Advanced Beginner	Recognizes familiar hazards.
Competent	Adjusts speed and route deliberately.
Proficient	Reads traffic flow, road surface, visibility, and vehicle behavior as one situation.
Expert	Anticipates what other drivers may do and continuously maintains safe options.

What develops: From rules → traffic ecology and anticipation.

Example 9 — Cooking: Preparing a Complex Meal

Stage	Typical response
Novice	Follows the recipe precisely.
Advanced Beginner	Recognizes familiar cooking stages.
Competent	Plans timing, ingredients, and sequence.
Proficient	Adjusts heat, texture, and timing based on the food's behavior.
Expert	Understands ingredient interactions and adapts fluidly to conditions while preserving the intended result.

What develops: From recipe following → sensory and causal judgment.

Example 10 — Investing: Evaluating a Market Decline

Stage	Typical response
Novice	Looks for a rule about whether to buy or sell.
Advanced Beginner	Recognizes familiar market patterns from previous declines.
Competent	Reviews allocation, risk tolerance, cash needs, and decision criteria.
Proficient	Understands the relationship between valuation, concentration, time horizon, and market regime.

Expert	Distinguishes noise from a meaningful thesis change and knows when conviction requires patience versus reassessment.
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What develops: From market reaction → disciplined contextual judgment.

Note: Financial expertise does not eliminate uncertainty or guarantee returns.

Example 11 — Teaching: A Student Is Struggling

Stage	Typical response
Novice teacher	Repeats the lesson or instructions.
Advanced Beginner	Tries a familiar explanation that worked before.
Competent	Creates a structured remediation plan.
Proficient	Identifies the student's underlying misconception.
Expert	Adjusts explanation, examples, pacing, and questioning to the student's mental model in real time.

What develops: From delivering content → diagnosing learning.

Example 12 — Leadership: Team Conflict

Stage	Typical response
Novice	Applies the organization's conflict-resolution procedure.
Advanced Beginner	Recognizes familiar interpersonal patterns.
Competent	Defines the issue, establishes responsibilities, and creates a resolution plan.
Proficient	Understands underlying incentives, emotions, history, and power dynamics.
Expert	Intervenes in a way that addresses both the immediate conflict and the system that produced it.

What develops: From procedure → organizational and relational understanding.

Example 13 — Home Repair: Plumbing Leak

Stage	Typical response
Novice	Searches for the correct repair instructions.
Advanced Beginner	Recognizes the type of leak from prior experience.
Competent	Shuts off water, gathers tools, and plans the repair.
Proficient	Understands how pressure, fittings, pipe age, and surrounding damage interact.

Expert	Identifies the likely source quickly, avoids causing secondary damage, and knows when replacement is wiser than repair.
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What develops: From task completion → system diagnosis.

Example 14 — Aviation: Abnormal Instrument Reading

Stage	Typical response
Novice	Follows the abnormal-procedure checklist.
Advanced Beginner	Recognizes a familiar abnormal indication.
Competent	Prioritizes aircraft control, diagnosis, and communication.
Proficient	Integrates instrument behavior, weather, aircraft feel, and flight context.
Expert	Maintains control while rapidly distinguishing a genuine system problem from misleading or secondary indications.

What develops: From procedure → integrated situational awareness.

Example 15 — Manufacturing: Product Defect

Stage	Typical response
Novice	Follows the defect containment procedure.
Advanced Beginner	Recognizes a recurring defect signature.
Competent	Organizes containment, data collection, and corrective action.
Proficient	Connects defect patterns to process conditions and upstream variables.
Expert	Recognizes the likely mechanism, validates it, and prevents recurrence through systemic correction.

What develops: From defect handling → process understanding.

Example 16 — Cybersecurity: Suspicious Login

Stage	Typical response
Novice	Follows the incident-response checklist.
Advanced Beginner	Recognizes familiar suspicious indicators.
Competent	Classifies the incident, prioritizes containment, and documents actions.
Proficient	Connects identity, device, network, timing, and behavior into a coherent threat picture.
Expert	Rapidly distinguishes likely attack paths, controls exposure, and avoids destroying evidence.

What develops: From indicator response → threat interpretation.

Example 17 — Personal Fitness: Training Fatigue

Stage	Typical response
Novice	Follows the prescribed workout.
Advanced Beginner	Recognizes familiar soreness or fatigue.
Competent	Plans training load and recovery.
Proficient	Distinguishes ordinary fatigue from signs that the training load needs adjustment.
Expert	Integrates performance, sleep, recovery, environmental conditions, and symptoms to adjust training appropriately.

What develops: From following a plan → managing adaptation and risk.

Example 18 — Research: Evaluating a New Claim

Stage	Typical response
Novice	Looks for whether the claim is supported by a source.
Advanced Beginner	Recognizes familiar arguments and evidence types.
Competent	Evaluates methodology, evidence, and competing explanations.
Proficient	Identifies hidden assumptions and limitations in context.
Expert	Quickly recognizes the claim's evidentiary structure, knows which uncertainties matter, and avoids overstating conclusions.

What develops: From source checking → epistemic judgment.

Example 19 — Project Management: Schedule Slippage

Stage	Typical response
Novice	Updates the schedule and reports the delay.
Advanced Beginner	Recognizes familiar causes of slippage.
Competent	Replans resources, dependencies, and milestones.
Proficient	Sees how one delay affects the entire project system.
Expert	Identifies the true constraint, distinguishes symptoms from causes, and makes trade-offs before the delay cascades.

What develops: From tracking tasks → managing system constraints.

Example 20 — Customer Service: Escalated Complaint

Stage	Typical response
Novice	Follows the complaint-handling script.
Advanced Beginner	Recognizes common complaint types.
Competent	Organizes facts, options, and resolution steps.
Proficient	Understands the customer's underlying concern and emotional state.
Expert	Resolves the immediate issue while preserving trust and identifying systemic causes.

What develops: From script → relationship and system judgment.

Example 21 — Personal Finance: Large Purchase Decision

Stage	Typical response
Novice	Asks whether the purchase is affordable according to a simple rule.
Advanced Beginner	Compares the purchase with similar past decisions.
Competent	Evaluates cash flow, opportunity cost, and priorities.
Proficient	Understands how the purchase affects long-term flexibility, lifestyle, and risk.
Expert	Integrates financial position, values, timing, uncertainty, and the psychological purpose of spending into a calibrated decision.

What develops: From affordability → life-system judgment.

Example 22 — Mentoring a New Professional

Stage	Typical response
Novice mentor	Gives instructions and demonstrates tasks.
Advanced Beginner mentor	Shares tips and personal experiences.
Competent mentor	Creates a structured training plan and evaluates performance.
Proficient mentor	Diagnoses the learner's misconceptions and adjusts the training.
Expert mentor	Develops the learner's judgment, gradually transfers autonomy, and teaches them how to recognize situations—not merely how to follow steps.

What develops: From teaching tasks → developing professional judgment.

6. What the Dreyfus Model Really Means Psychologically

The model describes a transformation in the **structure of attention, interpretation, and action**.

A. The novice sees tasks

“What do I do next?”

The world is divided into instructions and steps.

B. The advanced beginner sees familiar features

“This resembles something I have encountered.”

The person begins to recognize patterns but may not yet understand their significance.

C. The competent person sees objectives and priorities

“What outcome matters most, and how do I organize the work?”

The person becomes an intentional planner.

D. The proficient person sees situations

“What is the whole situation telling me?”

The person begins to perceive relationships, trajectories, and meaningful deviations.

E. The expert sees possibilities for action

“I recognize this configuration, understand its significance, and know what response is appropriate.”

The person acts with **situational fluency**.

The deepest shift

From:

Rules → Steps → Tasks → Plans

Toward:

Context → Meaning → Priorities → Judgment → Adaptive action

7. How Each Stage Makes Decisions Under Uncertainty

Stage	Decision style	Typical internal question
Novice	Rule-based	“What does the procedure say?”
Advanced Beginner	Experience-by-analogy	“What does this remind me of?”
Competent	Analytical and deliberate	“What are the goals, options, and trade-offs?”
Proficient	Contextual and anticipatory	“What is developing, and what matters most?”

Expert	Intuitive, integrated, adaptive	"What is this situation, and what action fits it?"
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But expertise does not mean abandoning analysis

A mature expert uses **two modes**:

1. **Fast recognition** when the situation is familiar and feedback is reliable.
2. **Slow analysis** when the situation is novel, high-stakes, ambiguous, or inconsistent with expectations.

This is particularly important in:

- Medicine
- Aviation
- Engineering
- Finance
- Cybersecurity
- Industrial operations
- Emergency response

Expertise includes knowing when not to trust your first impression.

8. Twenty-Two Guidelines Derived from the Dreyfus Model

These guidelines translate the model into a practical development system for individuals, trainers, managers, and organizations.

Guideline 1 — Start with explicit rules

Give beginners clear procedures, definitions, safety limits, and examples.

BKM: Never expect a novice to infer what has not yet been taught.

Guideline 2 — Teach the reason behind the rule

Explain not only **what** to do, but **why** it matters.

BKM: Every critical procedure should include its purpose, risk, and failure consequence.

Guideline 3 — Move from isolated tasks to real situations

Expose learners to realistic cases rather than only disconnected exercises.

BKM: Use scenario-based training as soon as foundational safety allows.

Guideline 4 — Build pattern recognition deliberately

Show multiple examples of the same underlying problem under different conditions.

BKM: Teach both “what this looks like” and “what can look similar but mean something different.”

Guideline 5 — Teach signal versus noise

Help learners identify which observations are critical, supporting, or irrelevant.

BKM: During reviews, ask: "Which three facts mattered most, and why?"

Guideline 6 — Require explanation, not just execution

A person who performs correctly may still lack understanding.

BKM: Ask learners to explain the expected outcome, failure modes, and decision logic.

Guideline 7 — Develop prioritization skills

Teach people to distinguish urgent, important, routine, and deferrable work.

BKM: Train with multiple simultaneous demands rather than one-task-at-a-time exercises only.

Guideline 8 — Teach planning before complexity overwhelms them

Competence requires the ability to organize resources, time, and dependencies.

BKM: Require a simple plan before complex work begins.

Guideline 9 — Use progressive autonomy

Do not keep capable people dependent on constant approval.

BKM: Define what the learner may do independently, what requires consultation, and what requires escalation.

Guideline 10 — Increase complexity gradually

Move from stable conditions to variation, ambiguity, and competing priorities.

BKM: Training should progress from routine → variable → abnormal → high-consequence scenarios.

Guideline 11 — Provide immediate, specific feedback

Generic feedback such as "good job" or "be more careful" is weak.

BKM: Identify the observation, decision, action, consequence, and improvement.

Guideline 12 — Turn errors into learning events

Punishment alone often hides future errors.

BKM: Ask what the person saw, believed, missed, and should recognize next time.

Guideline 13 — Teach mental models, not just memorization

People need to understand how the system behaves.

BKM: Use causal diagrams, fault trees, process maps, and "what-if" questions.

Guideline 14 — Develop situational awareness

Train people to perceive current state, meaning, and likely trajectory.

BKM: Ask three questions: "What is happening? What does it mean? What happens next?"

Guideline 15 — Make tacit knowledge visible

Experts should verbalize what they notice and why it matters.

BKM: Use think-aloud demonstrations and annotated real-world examples.

Guideline 16 — Teach intuition with verification

Do not dismiss intuition, but do not worship it.

BKM: Require experts to identify the evidence supporting their intuition and the observation that would disconfirm it.

Guideline 17 — Train under realistic pressure

Skill that works only in calm conditions is incomplete.

BKM: Introduce time pressure, interruptions, resource constraints, and uncertainty in controlled simulations.

Guideline 18 — Develop calibrated confidence

Learners should know both their capabilities and their limits.

BKM: Include "confidence rating + evidence + uncertainty" in assessments.

Guideline 19 — Teach escalation as a professional skill

Asking for help is not failure. Failing to recognize when help is needed is a failure mode.

BKM: Define escalation thresholds and practice using them.

Guideline 20 — Prevent expertise from becoming complacency

Experience can create blind spots.

BKM: Use audits, peer review, checklists for critical tasks, and periodic requalification.

Guideline 21 — Keep expertise current

Expertise decays when technology, procedures, environments, or evidence change.

BKM: Include refresher training, new-case exposure, and deliberate practice outside routine comfort zones.

Guideline 22 — Measure judgment, not only task completion

A person may complete a task while misunderstanding the situation.

BKM: Evaluate recognition, prioritization, reasoning, execution, adaptation, communication, and outcomes.

9. A Practical Dreyfus-Based Training Architecture

For a new professional—such as a **CMP technician, nurse, physician, cloud administrator, or technical specialist**—a strong training system can be organized as follows:

Training phase	Dreyfus target	Training method	Evidence of progress
Foundation	Novice	SOPs, terminology, demonstrations, safety training	Can explain and follow basic procedures
Guided practice	Advanced Beginner	Supervised repetitions, examples, common scenarios	Recognizes routine patterns
Independent operation	Competent	Planning, prioritization, realistic assignments	Performs reliably with limited supervision
Complex situations	Proficient	Case analysis, abnormal scenarios, mentoring	Recognizes patterns and anticipates problems
Mastery and leadership	Expert	Coaching, novel cases, system improvement, teaching	Demonstrates sound judgment and develops others

Recommended assessment dimensions

Do not measure only:

- Speed
- Number of tasks completed
- Memorization
- Attendance
- Years of experience

Also measure:

1. Accuracy
2. Safety
3. Pattern recognition
4. Prioritization
5. Situational awareness
6. Troubleshooting
7. Adaptability
8. Communication
9. Escalation judgment
10. Ability to explain reasoning
11. Ability to learn from errors
12. Ability to teach others

10. The Dreyfus Model Applied to a “Better Training Model”

If your goal is to build a **high-reliability training program**, the key question should not be:

“Has this person completed the training?”

Instead, ask:

“At what stage of skill acquisition is this person for each critical competency, and what evidence demonstrates that they can safely perform under the conditions they will encounter?”

Example competency matrix

Competency	Novice	Advanced Beginner	Competent	Proficient	Expert
Routine operation	Follows SOP	Performs familiar tasks	Works independently	Adapts to variation	Optimizes and teaches
Troubleshooting	Escalates using procedure	Recognizes common issues	Uses structured diagnosis	Sees system patterns	Rapidly diagnoses and prevents recurrence
Safety	Knows rules	Recognizes common hazards	Applies controls	Anticipates hazards	Builds safety into decisions
Communication	Reports observations	Describes familiar issues	Communicates plans	Communicates significance	Aligns teams under uncertainty
Decision-making	Rule-based	Pattern-based	Analytical	Contextual	Intuitive + analytical
Training others	Repeats instructions	Shares tips	Explains procedures	Teaches judgment	Develops future experts

11. Important Limitations and Critiques

The Dreyfus model is influential, but it should not be treated as a perfect law of human development.

1. Development is not always linear

A person may move backward under stress, fatigue, unfamiliar equipment, or a new environment.

2. Expertise is domain-specific

An expert physician is not automatically an expert semiconductor technician.

3. Experience quality matters

Repeated exposure without feedback can reinforce poor habits.

4. Intuition is not always reliable

Experts can be affected by bias, overconfidence, fatigue, and misleading environments.

5. The stages are not always easy to measure

Real people may demonstrate different stages across different competencies.

6. The model underemphasizes some social and organizational factors

Modern expertise research also emphasizes:

- Team cognition
- Organizational culture
- Tools and interfaces
- Workload
- Communication
- Psychological safety
- Institutional incentives
- Human-computer interaction

7. The model should not be used to justify removing safeguards

An expert may be allowed greater autonomy, but critical safety barriers, independent verification, and escalation mechanisms remain valuable.

12. The Entire Model in One Sentence Per Stage

1. **Novice:** "Tell me the rules and steps."
 2. **Advanced Beginner:** "I recognize some familiar situations."
 3. **Competent:** "I can plan, prioritize, and manage the work."
 4. **Proficient:** "I understand the whole situation and what is developing."
 5. **Expert:** "I recognize what matters and respond appropriately through deep, contextual judgment."
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Final Synthesis

The Dreyfus Developmental Model describes the evolution from **following instructions** to **exercising judgment**.

Its most important psychological lesson is:

A professional becomes expert not simply by accumulating information, but by learning to perceive significance, build mental models, recognize patterns, prioritize consequences, act adaptively, and continuously calibrate judgment through experience and feedback.

And its most important training lesson is:

Do not train people only to perform tasks. Train them to recognize situations, understand consequences, make decisions, and know when to act, adapt, or ask for help.