“Fostering Experiential Learning for the Development of Expertise.”

Practice as a Way of Knowing: Articulating Student’s learning Directly From Practice.

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When it **all** changed in Nursing Practice: Early 70's late 60's: Instantaneous Therapies Became the Norm.

- **Most patients now had I.V.'s and instantaneous I.V. Interventions became possible: Blood pressure control; Managing hemodynamics; Interventions for Tachycardia, Pain management; Treating Bronchoconstriction and more. (Standing Orders become more common.)**
- **Cardiac Resuscitation, and continuous cardiac monitors people and immediate interventions for heart arrhythmias were often administered first by nurses**
- **Patient observation, Assessment and Rapid Intervention became the norm and "early warnings" for serious clinical events became the goal**
- **Preventing "Failure to Rescue" and "Never Events" became major goals.**

The Radical Change in Nursing Practice Introduced by Instantaneous Therapies.

- **The Prime Mover for the needed increase nurse to patient ratios in the early 70's was that the new instantaneous therapies ushered in of the need for improved Patient Monitoring and Situational Awareness;**
- **"Early Warnings;**
- **"Rapid clinical decision-making" and the transfer of many direct therapeutic interventions from Physicians to Nurses.**
- **All these changes required close nurse monitoring of patients, and astute clinical reasoning.**

Innovations to Meet the Challenge of Instantaneous Therapies

- **Physician Standing Orders** were used for Immediate Instant Therapies
- **Intensive Care Units** were established for critically ill patients
- **Rapid Response Teams** were established for emergency patient conditions.
- **Hospitalists** were introduced
- **AI Early recognition of patient decline** established by Kaiser and other major hospital Systems
- **AI Prognostic/Early Warnings Work Best in Tandem with Expert Nurse who knows the patient Kaiser Permanente Studies on collaboration between expert nurse caring for patient paired with AI algorithms and prognoses.**
- **What's missing? Accurate descriptions of nursing practie and work redesign!!!**

The Front-line Work and Knowledge of Nurses in Direct Patient Care Still not Fully Articulated Nor Recognized.

- Time-lag in recognizing, describing the skilled know-how required to engage in rapid clinical decision making required for instantaneous interventions & therapies.

- Nursing Knowledge described in "Knowing That and About" terms with no account of Situated-thinking-in-action and rapid clinical decision making in a crisis. "Knowing how, when and why" not articulated, described, and thus, was relegated to the embodied, embedded, often tacit knowledge of nurses, and physicians.

Nursing role Described as: "Evaluate and modify plan of care independently" Typical "Knowing That, and About" Objectives, from Burn Care Textbooks.

- **Beginning**: Explains the pathophysiology of an acute burn injury: thermal injury; chemical injury; and electrical injury with assistance
  - Describes normal skin anatomy
  - Describes the Jackson's zones of injury
  - Differentiates varying pathophysiology related to etiology of injury
- **Advanced:** Assesses severity of burn injury: etiology, depth, extent, and location independently:
  - Describes the impact that the injury etiology has on extent/depth of injury
  - Describes the ABA criteria for minor, moderate and major burn injuries
  - Performs physical exam
  - Documents accurate burn extent using appropriate burn diagram
  - Differentiates burn depth characteristics
  - Identify and modify risks factors that lead to burn wound conversion – edema, infection, pressure
  - Verbalize risks of burn wound conversion (partial thickness to full thickness) in unknown/misunderstood mechanism of injury, improper resuscitation, hypothermia, and improper wound treatment.

Situated Thinking in Action: Administering Pain Medication to a Burn Patient with Patient with Sleep Apnea (Direct Observation with Interview)

Observer: An expert burn nurse details the patient's current condition and therapy.

She discusses a breakdown caused by small doses of valium and fentanyl but immediately recognizes the patient's adverse and unpredictable response to the two simultaneous interventions, withdraws both, and moves on to another pharmacological agent more successfully:

Nurse: His respiratory status is a concern and I won't give him valium again because I didn't trust his reaction to it. Basically the fentanyl took a long time to actually work, and then it caught up with him and then it took a long time for him to get rid of it. Hence, he oxygenated well, but his $PaCO_2$ was too high. It was 58, and he had severe sleep apnea. Severe.

- Even during the rest of the [scrubbing of the burn areas], we had to keep continually waking him up, and with the fentanyl, he just didn't wake up very well and we had to sit on him a while. In the process of all this, his blood pressure went really high, which is not usual. Systolic was 200 at one point, and his diastolic was 120 I believe. So, I just put a bunch of pillows behind him to try to bring his chin forward. I talked to the doc and gave him some nifedipine. His heart rate went really high, 160 to 175. This was all happening at one time and I think that he was having sleep apnea, and he was very very groggy, and even though I kept asking him about his pain and he kept saying, 'No, my pain is fine,' I think he had underlying pain that he couldn't articulate because he was too groggy. Once I finally bugged him enough and his meds worn off enough and he started waking up a little more, he then could articulate that he had a little pain and I gave him just a smidgen of morphine, and his heart rate started coming back down again. And by that time, the nifedipine had assisted with his blood pressure, and I think he's doing better.
- **Int:** So, you think his hemodynamics were pain-related?
- **Nurse :**I don't think they were all pain-related. I think probably the stress also [influenced them]. But I was concerned that we did have some deeper problems going on because I wasn't sure how well he was oxygenating. We had a blood gases and he was oxygenating fine, but because he has all four extremities burned and both ears, it's hard to get a pulse oximeter reading. Right now we happen to be lucky; it happens to be working.

But it was really intermittent, and I felt like I was struggling so, at one point, because there were all of these things happening, I was really unsure what was going on. And I didn't want to give him...I wanted to give him something to control his blood pressure because he kept denying pain to me. But I was also concerned, I didn't want to [vaso]dilate him too much, because he is a little bit hemodynamically dry. I'm not totally sure where we were because we were a little bit dry, although now he looks a lot better (looking at urine output in the urimeter). So, all those thoughts were going on and basically, once he woke up a little bit more and wanted something to drink, he realized, 'Oh, my hands are hurting.' So after giving him a little bit of morphine, his heart rate came down. His blood pressure had already come down some with the nifedipine. As far as his burn status fluids go, he is doing well... We're going to put him on a CPAP mask. I talked to him about [the sleep apnea] at home he said, 'yes,' his wife states that he does stop breathing during the night and that he is exhausted in the mornings when he wakes up.

He said as long as he breathes in the morning--he always wakes up, so I said, 'Have you ever had it treated', 'No, there's no reason, I always wake up.' (laughs) Okay, there you have it. So, we're going to put him on a CPAP mask now, that's why I'm waiting for respiratory to call back. And we want to make sure we keep pulses in his fingers, and that's what she's (the orientee) checking right now. He doesn't really have circumferential radial or arm burns over here, but because of the edema that will be created with the fluids we've given him, we just want good circulation down to his fingers. And then he's got more burns on his right hand, so his right hand will be even more important to check on (Observational Interview). Read Commentary

From: Benner, P., Hooper-Kyriakidis, P. & D. Stannard (2010) *Clinical Wisdom and Interventions in Acute and Critical Care.* Springer.

The Rapid Clinical Reasoning and Tactical Decisions Made in Patient Crises are **Informally Known, but Seldom Described in practice or in nursing education.**

- **This makes it hard to account for and give public credit to expert nursing performance.**
- **The most commonly ways of presenting know-how and knowledge are abstract formal accounts of "knowing that, about and why."**
- **Situated rapid naturalistic decision making and action, "knowing how and when" are seldom described and the language and communication strategies to describe them are limited.**

It is hard to make explicit all aspects of a rapidly moving practice situation

- The limits of "formalism:" Details in practical situations are too laborious to capture in real situations in terms of elemental components.
- The context of the nature of the situation determines the meaning or significance of actions and changes across time in the situation.
- **Our conventions of description are abstract, decontextualized, objective, with the personal actor removed, timing and changes across time are absent with only generalized features of the situation described.**

Clinical Knowledge Development in a Clinical Practice Requires:

- Development of shared notions of ethical comportment (in dispositions and actions, not just beliefs and decisions)
- Expert Clinical Reasoning, e.g., Early Warnings that result in Patient Rescue Articulating and capturing both practice breakdown, expert practice, and what is learned in practice leads to improved practice and better patient outcomes.
- Capturing front-line knowledge development with new patient populations, new procedures/clinical therapies is essential…This has demonstrated in COVID-19 a novel virus that didn't follow any of the viral analogues chosen. And it has been demonstrated by neonatologists studying every premature infant closely enough to increase premature infant survival rates significantly.
- Discovering and articulating- making public positive deviation…performance above the standard of practice, or usual practice outcomes

Practice is a source of knowledge development… Practice is a way of knowing in its own right

- "A wealth of untapped knowledge is embedded in the practices and the know how of expert nurse clinicians, but this knowledge will not expand or fully develop unless nurses systematically record what they learn from their own experience. And organizations, like all High-Reliability Organizations must study front-line knowledge and clinical learning in actual practice. Clinical expertise has not been adequately described nor compensated in nursing. This lag in description contributes to the lag in recognition and reward." (Benner, 1983 "Uncovering knowledge embedded in practice."

Clinical Exemplar "An uncomplicated Colonoscopy" Marcia Gruber, R.N.

- Over the next hour, Mr. Johnson became restless. Clearly, his pain was not resolving. I called the physician who'd done the colonoscopy. He examined the patient but suspected no serious complication. At my urging, he agreed to order a flat plate of the abdomen.

- The X ray showed no evidence of a bowel perforation, but Mr. Johnson's pain continued to worsen. His vital signs were stable, but when I palpated his abdomen, I found it tense, with some guarding. Although I couldn't explain what might have gone wrong, I was reluctant to discharge the patient. He was admitted overnight…Soon after, the nurse caring for Mr. Johnson reported that his BP had fallen to 60 systolic. His heart rate was 140 and he was complaining of pain in his left shoulder. The physician arrived; all agreed that the patient was in hypovolemic shock. His abdomen was distended with pronounced guarding.

- The surgeons were called; a diagnostic paracentesis yielded blood. The patient was taken to the OR immediately, where an emergency laparotomy revealed blood in the peritoneal cavity, caused by a ruptured spleen. His spleen was removed. Mr. Johnson recovered fully. (AJN, Gruber & Benner"A Dialogue with Excellence 1989)

Experiential Learning Necessary for a Practice Discipline

- Knowing "how" and "when" and "why" in context requires experiential learning directly from practice for ***all*** practice disciplines.

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- Knowing "about," "knowing that, and "knowing why" must be integrated with **situated "knowing how, when and why" in the particular case**.

The Dreyfus Model of Skill Acquisition: Experiential Learning Necessary for a Practice Discipline.

- An Interpretive, Descriptive Account of Experiential Learning.
- This is not a "deficit" model. Rather it describes what is experientially learned at each stage of Skill Acquisition.
- A Positive Project: It discloses what is learned at each stage.

Novice
First year of education

- Little or no experiential background understanding
- Recognizes attributes and features
- Requires rules and broad guidelines to organize task world
- Matches actual cases with textbook descriptions

Teaching-Learning Strategies—NOVICE

- **Fill in perceptual grasp/understanding of whole situation, complete with a sense of salience.**
- **Promote Narrative Memory of whole concrete clinical situations. Surpasses lists of "signs and symptoms."**
- **Help student with little or no experience to cope with "the limits of formalism"…the inability to make all features, aspects of practice situations completely explicit.**

Teaching-Learning Strategies—**NOVICE**

From "Old Fashioned Artificial Intelligence" to Neuro-net…From representational view of mind, thinking to direct immersion and learning from practical situations…real clinical situations.

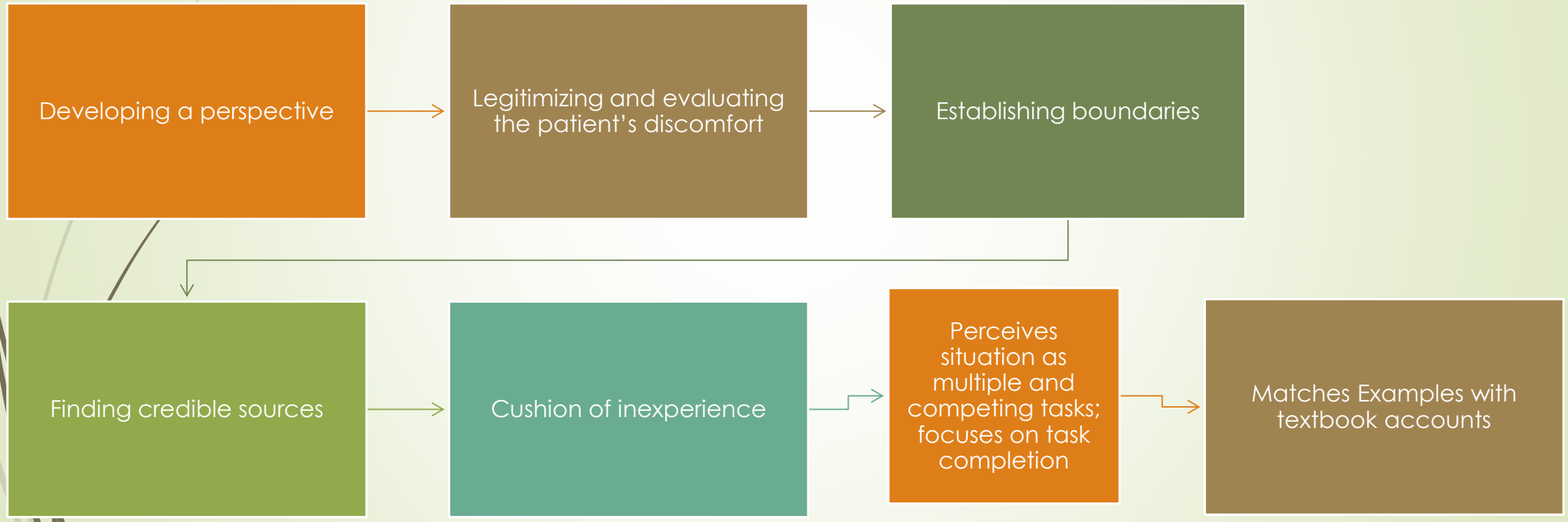
Teaching for a sense of salience, **before** the student has first-hand experience to know what is most and least important in a clinical situation. Recognizing urgency and priority through situated coaching.

Coach students to develop and unfolding narrative about changes in the situation across time and connect **current** situation with **past** and **future** situations (Dewey. John, 1938, *Experience and Education)*.

Advanced Beginner—**New Graduates**

Temporal focus, immediate present	"Delegating up," interpretation of actual clinical variations needed	Beginning agency
Forecasting is limited by experience	Reliance on protocols	Engaged, Enthusiastic learner

Advanced Beginner—**New Graduates**



Advanced Beginner, Seniors, New Graduates…Teaching-Learning Strategies Beginner, Senior to New

- Situated coaching with particular situations needed to make a meaningful whole (clinical grasp) of the meaning, nature of the whole clinical situation.
- Situated coaching to recognize early warnings about Changes in patients' clinical condition.
- Help student identify local practical and organizational knowledge that they need to practice.
- Introduce planning sheets for care, and organizational time/management strategies. Reduce stress through time management and **early skill mastery immersion.**

Competent Stage 1-2 years in practice?

- A time of planning and analysis
- Limit the unexpected through planning and prediction
- Anxious times now more tailored to situation
- Clinical forethought and Clinical Grasp developing

Competent

- Limits of formal knowledge
- Must Choose a perspective on the particular situation
- Increased recognition of similar clinical situations
- Encountering the patient anew

Competent

- The limits of formal knowledge
- The process of disillusionment
- A crisis in trust
- Excessive sense of responsibility

Competent…
Teaching and Learning Strategies

Make	Make comparisons between current case and past whole concrete cases.
Develop	Develop a dialogue between the particular and general.
Use	Use clinical narratives to help develop clinical imagination.
Have	Have competent nurse work with proficient and expert nurses. Vary assignments!

Proficiency Experience-Based Transition to Expertise

- A QUALITATIVE LEAP in way work is organized
- Sees the "big" picture
- Takes situated action
- Nuances in understanding added
- Learns to trust own judgment based upon grasp and experiential learning

Expertise

- Recognizes the unexpected
- Response-based actions…attunement to situation and patient
- Develops new operating insights and knowledge

Mastery-ONE

- Understanding of the situation adds meaning of the practice-world as a whole. Eg. End of Life care, introducing palliative care into ICU when patient can't be moved.

- Discloses new possibilities for continuing innovative practice in the face of conflict or confusion.

Eg. Allowing family extended visiting times.

Mastery-TWO: Radical Innovation Changes the practice World

- Disclosing new worlds of practice….Eg. non-clinic practice; Developing a culture of health; Decreasing “Wait Times” for heart attack and stroke care in Japan.

Quality Improvement In Complex Highly variable Health Care Organizations Requires Front-Line Knowledge Workers' Situated Thinking –in-Action, Excellence **and** Systems Engineering

- Inherent collisions/cross-purposes between managerialism and standardized routines, over-simplification, checklists, AND

- High Reliability Organizations with Cultures of Safety, Mindfulness, and Continuous Quality Improvement are Needed for innovation and to Improve Quality, Patient Outcomes and the Work Environments of Nurses and Physicians

High Reliability Organizing (HRO) is the Extension of Neonatology during Pandemic COVID-19

- May 2021

- Neonatology began with the extension of care to smaller babies born earlier in gestation and now extending into the threat of COVID-19. Extending operations into a new environment places everyone in novel situations. Emerging from actual operations within dangerous contexts, HRO extends operations and the organization into uncertain, adverse, and hostile environments. The physical actions of care come from motor cognition, the influence of the cerebellum and motor cortex on cognition, and how we learn through physical action to understand ….– {Novel diseases and events create} an exigency of ambiguous information, impending proximal threat, uncertainty, and demand for action. …..When a person believes in themselves, they will leave their place of safety and engage the unknown when they know they are supported. This is the extension of neonatology.

HRO's Promote Clinical Wisdom, Daily Prevention of Hazards and Promotion of Quality

- "Struggling to get it right in the situation on a continuing basis is the hallmark of high reliability organizations." Weick and Sutcliff, 2015)

Problems of Managerialism Alone

- Over-Simplification and Invariable Procedures may be wrong in particular under-determined clinical situations….
- "Top-Down" Standards and Rules
- Managerialism may decrease Situational Awareness, Situated Judgment and Socially Embedded Skilled-know-how

See Sullivan and Rosin A New Agenda for Higher Education, Shaping the mind for Practice Carnegie Foundation for the Advancement of Teaching, also Jane Rubin's chapter 7 in Expertise in Nursing Practice: Caring Clinical Judgment and Ethics)

- "…Practical reason, once central to education…has been all but eclipsed in the focus on utility on the one side and on abstract analytical thinking on the other….This book will show that teaching for practical reasoning is concerned with the formation of a particular kind of person---one who is disposed toward questioning and criticizing for the sake of a more informed and responsible engagement. Such persons use critique in order to act more responsibly as it is the common search to realize valuable purposes and ideals that guides their reasoning. Practical reason grounds the academy's great achievement---critical rationality---in human purposes that are wider and deeper than criticism….In the end practical reason values embodied responsibility as the resourceful blending of critical intelligence with moral commitment."…p.xvi….Also check out , Halpern, J. From Detached Concern to Empathy.

Joseph Dunne in *Back to the Rough Ground:*

- A practice is not just a surface on which one can display instant virtuosity. It grounds one in a tradition that has been formed through an elaborate development and that exists at any juncture only in the dispositions (slowly and perhaps painfully acquired) of its recognized practitioners. (Pp. 378-380).

- Practice is a socially-embedded form of knowledge with notions of good internal to the practice.

Changing the Way we Describe, Organize and Teach Front-line Knowledge Work

- "Subsuming things under categories is not the same thing as productive thinking." Knud Logstrup

- Abstract Objective Accounts Not the Same as Situated thinking-In-Action. Benner, 1983; 1996; 2010; Lave and Wanger 1991; and *Cambridge Handbook of Situated Cognition Edited* by Philip Robbins and Murat Aydede (2008)

The Nature of Practice

- It is impossible to make the knowledge embedded in practice completely formal, completely explicit.
- Much clinical knowledge is only elicited by the situation…it is context, sequence, qualitative distinctions and timing dependent. Modus Operandi thinking Required…M.O.
- Requires first-person account of engaged actor, or account of engaged observers

Practice is a Way of Knowing in Its Own Right.

- Narratives of Learning.
- Constitutive and Sustaining Narratives.
- Narratives of Breakdown and Error.

Enhancing Relational Skills

- Skills of involvement are a key to developing expertise or practical wisdom…good ethical and clinical judgment.
- Moral agency is conditioned by situated skillful ethical comportment..
- Good relationships create different ethical perceptions and disclosive spaces, &different situated-possibilities for patients and families.

The role of articulation for clinical knowledge development…A Key Source of Innovation.

1) Articulating what you know in practice
2) Naming the silences.
3) Describing new improved practices,
4) Describing new clinical knowledge
5) Describing front-line knowledge of novel diseases, novel pandemic, or premature neonates.

- Thank you!