CASE STUDY · ANATOMY & PHYSIOLOGY · COMMUNITY COLLEGE OF RHODE ISLAND · RHODE ISLAND

“I Could Tell Which Students Understood the Material Just by Reading the Transcripts.”

A patient communication simulation in Anatomy & Physiology · Spring 2026 · 11 students · CCRI Allied Health Program

THE SETUP

Eleven students in a community college Anatomy & Physiology course were given one task: explain dark adaptation to Evelyn Sorrento, a 67-year-old retired elementary school teacher from Cranston who was genuinely worried about her vision. Evelyn did not understand medical vocabulary. She misinterpreted jargon specifically and concretely — “rhodopsin” became “rose dopamine? Is that a medication?” — and she would not grant comprehension unless the student earned it in plain language.

There were no formulas, no lab reports, no multiple-choice questions. Five conceptual checkpoints had to be reached: how the eye converts light into a signal, the difference between rod and cone cells, how rhodopsin depletes and regenerates, how cold slows that process, and — introduced mid-simulation without warning — how a Vitamin A deficiency cuts off the raw material the eye needs to rebuild. Evelyn pushed back on incomplete explanations, stayed confused when a student repeated themselves, and responded to warmth when students remembered she was a person, not a test question.

The transcript of the conversation was the assessment.

WHAT THEY EXPERIENCED

The simulation produced a clear three-tier split. Six students scored between 83 and 95. One landed at 66. Three scored between 40 and 55. The gap between tiers was not primarily about knowledge of the material — it was about the ability to translate that knowledge under patient pressure.

High scorers found their footing through metaphor. “Day and night crews” for rod and cone cells, “battery charging” for rhodopsin regeneration, “factory workers” and “delivery trucks” for the Vitamin A supply chain. When Evelyn heard those images, she granted comprehension. When she didn’t, she stayed stuck. Students who adopted the metaphor framework moved through all five checkpoints. Students who cycled through definitions without finding another angle did not.

The Vitamin A checkpoint was the clearest differentiator between good and great. It arrived mid-simulation without warning, requiring students to connect a nutritional deficiency to the biochemistry they had already been explaining. Strong performers wove it into the existing metaphor framework without breaking stride. Mid-range and struggling students either avoided it entirely, gave incomplete explanations, or couldn’t connect it to rhodopsin at all. One student, when pressed on the biochemical link, told Evelyn she wasn’t “comfortable” discussing it. Evelyn eventually summarized the connection herself.

Not every student broke through. The three lowest scorers shared a pattern: jargon delivered without translation, combined with at least one additional failure mode. One student opened by diagnosing Evelyn with Retinitis Pigmentosa — a serious degenerative genetic disease

unrelated to the scenario — causing real alarm before recovering. Another used one-word answers with a worried patient. A third repeated clinical terms after Evelyn showed confusion, with no attempt to find different language.

One student hit all five checkpoints and still lost 15 points — not for clinical errors, but for breaking the simulation's structure. She produced lecture-style text blocks, ignored formatting rules, and added meta-commentary like "Then you can check understanding." The content was strong. The clinical presence was not. The transcript showed both, clearly and separately.

WHAT THE INSTRUCTOR SAW

> **"I can tell which students were really on the ball with their answers — and that tracks with how they're doing in the class overall."**
>
> **— Samantha Nicodemus, Anatomy & Physiology, CCRI**

Samantha Nicodemus had not run the AI assessment tool before the debrief call. She had read the transcripts herself. Her read of individual students matched the scored results.

That alignment matters. It suggests the simulation surfaces the same signal a skilled instructor already detects in office hours and lab — the difference between a student who can perform a procedure and a student who understands what the procedure describes — but does it at scale, in a format that produces a written record.

> **"I really appreciated the kind of questions that the bot was giving to the student. I could really see how — this is incredible — how you trained that bot that the questions would come up. I loved it."**
>
> **— Samantha Nicodemus**

The moment that stayed with her was a line Evelyn delivered when a student resorted to Greek etymology instead of plain explanation: "Latin roots aren't going to help me see in the dark." Nicodemus brought it up twice on the call, unprompted, laughing. It was the moment the bot's resistance felt real rather than scripted — and the moment she understood what productive friction looks like from the teacher side of the room.

> **"That's exactly what my students need to be able to do — because when they're working with patients, they need to be able to explain things. That's why they responded to it so well. They actually have to take what they've learned and then actually talk about it."**
>
> **— Samantha Nicodemus**

Her students are headed into clinical settings. The ability to explain a physiological process to a non-specialist is not a soft skill for allied health students — it is the job. The simulation put them in that position before the first clinical rotation.

STUDENT VOICES

WHAT IT REVEALED

There is a specific version of the knowing-explaining gap in clinical education. A student can memorize the rhodopsin regeneration cycle — the biochemical steps, the vocabulary, the correct answers on a lab exam — without having a working model of what it means for a patient sitting across from them in a dark room, scared about her vision. Most assessments test the first kind of knowing. Patient communication requires the second.

The simulation forced the distinction. Evelyn did not accept clinical definitions as understanding. She accepted explanations that connected to her experience — her daily life, her actual question: why can't I see in the dark at my age, and what can I do about it? Students who could make that connection demonstrated something a written exam cannot test for. Students who couldn't were visible in the transcript within the first few exchanges.

The Vitamin A reveal mechanic is worth noting specifically. It was designed to test adaptability: could a student integrate new clinical information mid-conversation without breaking the explanation framework they had already built? High scorers threaded it in smoothly. Struggling students treated it as a separate topic they couldn't connect. That difference — adaptive versus compartmentalized clinical reasoning — is exactly the kind of thing that shows up in a real patient interaction and almost never shows up on a test.

Nicodemus described pre/post lab as the primary home for the simulation going forward: not a final exam, not a bonus activity, but a regular application layer that sits alongside anatomy lab work and fills the physiology gap that anatomical models can't reach. The transcripts are the record of that practice. What they show a teacher — specifically, which students can explain the material and which ones cannot yet — is not available any other way.

11	79 avg	40 – 95	5 / 5
students	score / 100	score range	checkpoints reached

FINDING	WHAT THE TRANSCRIPTS SHOWED
Vocabulary ≠ understanding.	Students who opened with terms like “rhodopsin,” “phototransduction,” or “Retinitis Pigmentosa” without translation stalled immediately. The bot’s resistance made the gap between knowing a word and understanding a concept visible within the first two or three exchanges.
Metaphor adoption separated the tiers.	All six high scorers (83–95) adopted plain-language metaphors — “day and night crews,” “battery charging,” “factory workers,” “delivery trucks” — and earned Evelyn’s comprehension at those moments. Students who repeated clinical definitions without finding an image did not break through.
Vitamin A was the differentiator.	Integrating the Vitamin A reveal — introduced mid-simulation without warning — separated strong performers from the rest. Students who couldn’t connect a nutritional deficiency to the rhodopsin production cycle lost the most points. The ones who wove it into their existing metaphor framework didn’t miss a beat.
Effect vs. mechanism.	One student correctly identified that cold slows dark adaptation but attributed it to dehydration rather than enzyme kinetics. The transcript surfaced that specific gap. A multiple-choice question would not have.
Transcripts matched instructor intuition.	The instructor reviewed the transcripts before the debrief and noted she could identify which students understood the material just from how they talked to Evelyn — and that it mapped directly to their overall class performance.

Scoring note: Simulation performance evaluations were conducted using an AI assessment tool and reviewed by the assigning educator. Performance metrics involve inherent subjectivity and should be read alongside the qualitative observations in this report.