Five Design Principles: What Human-Centered Design Revealed

These five principles didn't come from design theory. They emerged directly from listening to students, observing real moments of struggle, and testing what made support feel empowering rather than exposing. Each shaped critical decisions about what to build and how to build it.

Principle 1: Support Should Feel Invisible, Not Exposing

Students repeatedly described the tension between wanting help and fearing being seen receiving it. One student said: "Everyone knows where I'm going when I leave class on Thursdays. They don't say anything, but I know they know. It makes me feel different."

Traditional supports—pull-out groups, adult aides hovering at lunch—inadvertently create new social barriers. Students became hyper-aware of being watched, which generated anxiety that interfered with learning.

This principle shaped every aspect of Social Cue's design. The app is accessible without permission, private by default, and indistinguishable from other technology use. Future wearable components must look like something any student might choose to wear: a fitness tracker, a smartwatch, not a medical device.

Principle 2: Real-Time Support Matters More Than Perfect Support

Social challenges happen in hallways, at lunch tables, during group projects. They happen fast. By the time a student receives feedback days later during their weekly social skills session, the moment has passed and the emotional weight has already been carried.

Katelyn Kaufman explained: "I can teach a student how to join a conversation in our session. But when the actual moment happens at lunch, I'm not there. And by the time they come back to see me, they've already internalized whatever happened as another failure."

I witnessed this repeatedly. In one therapy session, a student role-played joining a conversation with 90% accuracy. Hours later, that same student stood frozen outside a lunch table group, unable to apply the skill.

This led to scenario-based practice that simulates real situations with immediate, contextual feedback. The long-term vision includes wearables that detect physiological stress patterns as they happen, providing grounding prompts before stress becomes overwhelming.

Principle 3: Social-Emotional Skills Are Physical as Much as Emotional

During observations, I watched students' bodies signal stress before their words did: clenched fists, shallow breathing, tension in shoulders. Social anxiety isn't just mental. Students feel it physically: racing heart, tight chest, sweaty palms.

Research on heart rate variability shows it's a reliable marker of emotional regulation capacity. Teaching students to recognize "my heart is racing and my breathing is shallow" gives them concrete, embodied information they can act on.

Even without hardware, the AI coach models grounding strategies that connect students to their physical experience. Future HRV monitoring will allow students to see their physiological patterns and learn techniques to shift their stress responses in real time.

Principle 4: Teachers Need Patterns, Not More Tasks

During my 23 classroom observations, I witnessed teachers identifying student struggles in 31 separate instances but lacking bandwidth to provide immediate support. In 19 of those instances, the critical moment for intervention passed before the teacher could reach the student.

Mrs. Park explained: "I have 28 students. Six have significant social-emotional needs. I can't monitor six different interventions, track progress, and communicate with parents about all of it. I just don't have the time."

This led to a critical design decision: Social Cue had to work for students independently. Teachers can access high-level dashboards showing engagement patterns and stress trends, but students don't depend on teacher monitoring to benefit. The system generates insights automatically, requiring no data entry.

Principle 5: Feedback Should Protect Dignity

I noticed students responded differently to feedback. Corrective feedback, even when kind, triggered withdrawal. But encouraging, dignity-preserving feedback had the opposite effect: students leaned in, tried again, took risks.

One student crystallized this: "When teachers tell me what I did wrong, I just feel stupid. But when they tell me what I did right and what to try next, I feel like I can actually get better."

This influenced every word of the AI coach's responses:

Instead of: "You didn't make eye contact. You need to look at people when you talk to them."

Social Cue says: "One thing that can help people feel like you're interested in talking with them is looking at their face while you speak. Want to try this scenario again and experiment with that?"

The AI normalizes struggle, celebrates effort, frames mistakes as information, and consistently assumes capability. Over time, this shapes students' internal narratives from "I'm bad at social stuff" to "I'm learning social skills. I'm getting better."

How Principles Guide Design

These principles aren't static rules. They're living guides that inform every design decision. When I'm uncertain about a direction, I return to these questions:

- Does this feel invisible and dignity-preserving, or exposing?
- Does this provide support when students need it, or only when convenient for adults?
- Does this account for the physical dimensions of social-emotional experience?
- Does this reduce burden on teachers or add to it?
- Does this feedback protect dignity and assume capability?

This discipline keeps the work grounded in what students, teachers, and families actually need rather than what seems technically interesting. It's what gives me confidence that Social Cue is building toward something genuinely helpful.