

From Code to Connection: Storytelling as a Pathway to Sense of Belonging in Computing

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Abstract

While mathematical and machine learning models are powerful tools for prediction, they present challenges in understanding how they work. Techniques such as random forests can uncover patterns and generate accurate results, yet interpreting these models requires strong foundations in mathematics, statistics, and computation. In many computing programs, students learn to run models and produce outputs but lack the context to interpret them meaningfully, creating a gap between analysis and understanding.

Storytelling as a Bridge. Storytelling transforms abstract technical results into human-centered narratives that foster clarity, creativity, and critical thinking. By framing data within stories, students connect computation to real-world contexts, deepening their ability to reason, communicate, and innovate. Storytelling also strengthens a *sense of belonging* by helping learners see themselves as part of a broader community rather than isolated individuals confronting abstract problems. When students relate their experiences to those of peers, mentors, and professionals, they build confidence, persistence, and professional identity.

Language Justice. Language justice ensures that students can learn, think, and share in the languages that best express their identities. Encouraging multilingual expression in computing not only validates diverse perspectives but also enhances participation and comprehension. This approach broadens access to computing education, by affirming that linguistic and cultural aspects are assets to problem-solving and innovation.

Triangulation and Rigor. Data triangulation—the integration of multiple sources, perspectives, and methods—enhances the validity and richness of interpretations. Within storytelling, it enables students to approach computational problems from varied angles, supporting more complete and credible conclusions.

Integrating Across Disciplines. Embedding storytelling, language justice, and triangulation into computing courses such as *Fundamentals of Programming I and II* connects human experience with computational reasoning. These multidisciplinary practices cultivate interpretive insight, technical rigor, and inclusion—empowering students to not only code but to communicate, reflect, and contribute meaningfully to the evolving landscape of computing and cybersecurity. In this work, we present our preliminary exploration into the theoretical foundations of storytelling as a pedagogical approach in introductory computing education. Specifically, we examine how narrative-driven practices can enhance students' engagement, motivation, and sense of belonging within computer science courses. By integrating storytelling into programming instruction—through contextualized examples, reflective activities, and personal narratives—educators can humanize abstract computational concepts and foster inclusive learning environments that support diverse learners in developing both technical and professional identities.