

Bridging the Empathy Gap: Hands-On Exploration of **H**uman-**E**mpathy **A**ccessibility Learning (HEAL) Interventions in Computer Science Education*

Conference Workshop

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This workshop addresses the critical need for empathy development in computer science education, emphasizing the importance of understanding user needs, effective communication, collaboration, and inclusive design [9]. As 41 states across the United States have adopted accessibility policies, affecting 82% of the nation, the pursuit of inclusivity goes beyond mere compliance with regulations. However, despite the significant presence of disabilities, computer science students often remain minimally exposed to the challenges of developing technology through the lens of individuals with disabilities [5]. This deficiency highlights the critical importance of embedding empathy and user-centered perspectives into their educational framework. To address this deficiency, the workshop provides participants with hands-on experience through in-person accessibility interventions, showcasing the impact of Human-Empathy Accessibility Learning (HEAL) on undergraduate computing students. Supported by foundational research, these in-person interventions are shown to enhance empathy, understanding of technological barriers faced by individuals with disabilities, and foster a wide range of skills including technical proficiency, soft

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skills, and empathy-related abilities crucial for career progression [2]. The workshop is structured as an immersive exploration of three distinct accessibility interventions, coupled with discussions on the application of validated scales for evaluating the interventions' impacts. A fundamental goal is for attendees to be capable of conducting these interventions in their classrooms, thus extending empathy among computing students in collegiate settings and equipping future computing professionals with the empathy, understanding, and inclusivity needed to navigate the challenges of the modern workplace [2, 5, 9].

1 Introduction

In the dynamic world of computer science education, empathy integration is becoming increasingly crucial [9]. Empathy plays a vital role in effective problem-solving and user-centered design and is crucial for understanding user needs and fostering inclusive design practices [4]. Our HEAL workshop, recognizing the need for understanding user needs and inclusive design, aims to fill the educational gap in addressing disabilities in technology development. It offers hands-on accessibility intervention experiences to cultivate empathy in undergraduates [2].

1.1 Workshop Structure

Our workshop, aimed at fostering a more empathetic and inclusive computer science education, begins with PLAN-O (presence, listening, attention, non-judgementalism – leads to openness) mindful introduction[1] to highlight the importance of empathy. Human-Empathy Accessibility Learning (HEAL) project's principles will provide a scientific overview of its rationale. The core is a 1.5-hour hands-on session which highlights 3 accessibility interventions, connecting participants to empathy and inclusive design. A 15-minute discussion follows on evaluation metrics culminating in key takeaways and potential HEAL applications in various educational contexts.

2 Workshop Session Agenda

- **Introduction and HEAL Project Overview (15 minutes)** The introduction will cover the importance of empathy in computer science education and a discussion of the current state of accessibility policies in the United States.
- **Hands-On Experience with Accessibility Interventions (1.5 hours)** Participants will be invited to explore three immersive accessibility inter-

ventions. The interventions include a client reveal, immersive hands-on empathy lab and RIT's Accessibility Learning Lab (ALL) [3, 6, 7, 8].

- **Discussion: Psychometric Instruments (15 minutes)** An overview of the how the validated Perth Empathy Scale (PES), TEIQue 2.0 Emotional Intelligence, and the work motivation surveys are utilized to evaluate the impact of the interventions will be offered.
- **Q&A, Group Discussion (15 minutes)** Participants will be given an opportunity to share experience and insights and invited to a collaborative conversation about integrating empathy into computer science education.
- **Closing remarks and future implementations (15 minutes)** Key takeaways from the workshop along with a discussion on potential implementations of HEAL interventions in diverse educational settings.

Requirements: Participants are asked to bring a laptop for the hands-on experience.

Target Audience: Educators, curriculum developers, and administrators in computer science education interested in fostering empathy and inclusivity in their programs.

By the workshop's conclusion participants will have gained practical insights into implementing HEAL interventions and evaluating their impact, contributing to a more empathic and inclusive computer science education landscape.

References

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Presenter Biographies

Maggie Frechette is a 4th year undergraduate student studying computer science at Siena College and the team lead for this research at Siena College.

Annabel Fisher is a 3rd year undergraduate student studying psychology at Siena College. She has contributed to the team’s understanding of empathy and how to design the interventions to best build this skill.

Jon LeFrois is a 3rd year undergraduate student studying actuarial science and computer science at Siena College. He has contributed to the design of the study and has helped conduct this research.

Mohammad Shaikh is a 4th year undergraduate student studying computer science at Siena College. He has contributed to the design of the study and has helped conduct this research.

Daniel Krutz is the PI of the NSF-funded projects (#1825023, #2111152 and #2145010) that are devoted to creating the Accessibility Learning Labs

(ALL). Krutz has taught approximately ten different graduate and undergraduate software engineering courses and is the author of over twelve pedagogical research papers.

Samuel Malachowsky is the Co-PI of the project that is developing the described ALL accessibility labs. Malachowsky is a Sr. Lecturer at RIT and has authored 9 pedagogically focused publications. He holds a Project Management (PMP) certification and has authored a textbook on team leadership.

Dmitry Burshteyn is an Associate Professor of Psychology at Siena College, specializing in the psychology of decision-making and problem-solving, with a strong focus on accessibility training. His academic foundation is rooted in experimental psychology, where he has developed an expertise in research methodologies and statistical analysis.

Jami Cotler is an Associate Professor of Computer Science at Siena College with a research and teaching focus in career readiness, accessibility advocacy, empathy development for software engineers, and UX Design. She has over 25 years of experience in academia and industry with sixteen pedagogically focused publications.