



Michael McQuaid

Usability, Accessibility and Social Entanglements in Advanced Tool Use by Vision Impaired Graduate Students

KRISTEN SHINOHARA, Rochester Institute of Technology, USA

MURTAZA TAMJEED, Rochester Institute of Technology, USA

MICHAEL MCQUAID, University of Texas at Austin, USA

DYMEN A. BARKINS, Rochester Institute of Technology, USA

Despite increasing work investigating the accessibility of research tools, most accessibility research has traditionally focused on popular, mainstream, or web technologies. We investigated barriers and workarounds blind and low vision doctoral students in computing-intensive disciplines experienced and engaged, respectively, when using advanced technical tools for research tasks. We conducted an observation and interview study with eight current and former Ph.D. students, closely analyzing the accessibility of specific tasks. Our findings contextualize how inaccessible tools complicate research tasks, adding time and effort, and exacerbating social entanglements in collaborative relationships. This work contributes empirical data that extricates how in/accessibility of advanced technical tools used in research influences productivity and collegial efforts.

CCS Concepts: • **Human-centered computing** → **Accessibility**; **Empirical studies in accessibility**; **Empirical studies in collaborative and social computing**; • **Social and professional topics** → **Computing education**.

Additional Key Words and Phrases: Higher Education, Workflows, Accessibility, Technical Tools

ACM Reference Format:

Kristen Shinohara, Murtaza Tamjeed, Michael McQuaid, and Dymen A. Barkins. 2022. Usability, Accessibility and Social Entanglements in Advanced Tool Use by Vision Impaired Graduate Students. *Proc. ACM Hum.-Comput. Interact.* 6, CSCW2, Article 551 (November 2022), 21 pages. <https://doi.org/10.1145/3555609>

1 INTRODUCTION

Graduate students with disabilities experience inaccessibility as a disparity between how they use and manage technologies and services and how nondisabled students use and manage those same technologies and services [22, 26, 44]. Often, despite systems and resources in place to provide accommodations to address access issues [50], access remains inequitable when solutions require overhead or are inadequate [14, 43]. Access inequity was defined as the degree to which accommodation addresses (or does not address) accessibility needs, especially leading to altered performance or slow progress when imbalanced accommodations make more work for students [43]. Indeed, less than 6% of doctoral recipients in computing reported they had a disability in 2017¹, indicating that few graduate students identify as blind or low vision. We may infer from this

¹<https://nces.nsf.gov/pubs/nsf19304/data>