Michael McQuaid

The Burden of Survival: How Doctoral Students in Computing Bridge the Chasm of Inaccessibility

Kristen Shinohara
kristen.shinohara@rit.edu
Rochester Institute of Technology
Rochester, NY

Michael McQuaid
mickmcquaid@gmail.com
Rochester Institute of Technology
Rochester, NY

Nayeri Jacobo
nj1919@rit.edu
Rochester Institute of Technology
Rochester, NY

ABSTRACT

Despite efforts to support students with disabilities in higher education, few continue to pursue doctoral degrees in computing. We conducted an interview study with 12 blind and low vision, and 7 deaf and hard of hearing current and former doctoral students in computing to understand how graduate students adjust to inaccessibility and ineffective accommodations. We asked participants how they worked around inaccessibility, managed ineffective accommodations, and advocated for tools and services. Employing a lens of ableism in our analysis, we found that participants' extra effort to address accessibility gaps gave rise to a *burden of survival*, which they sustained to meet expectations of graduate-level productivity. We recommend equitable solutions that acknowledge taken-for-granted workarounds and that actively address inaccessibility in the graduate school context.

CCS CONCEPTS

• **Human-centered computing** → **Accessibility**; • **Social and professional topics** → **Computing education**.

KEYWORDS

Accessibility, Higher Education, Computing Education Research, Ableism

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1 INTRODUCTION

In the United States, the National Science Foundation's Survey of Earned Doctorates (SED)[1] in 2017 reported as few as 2.9% of doctoral graduates in computing indicated a functional limitation [2]. Of those, 66 or 3.6% of respondents indicated a vision impairment, and 15 or 0.8% indicated a hearing impairment [28]. By comparison, in 2016, 5.54% of computing undergraduate students reported having a disability [28], indicating a shrinking pipeline of students who pursue advanced degrees.

In domains across the technology industry, increased representation of researchers with disabilities can improve innovations that harness and augment human behavior and ability, for example, improving artificial intelligence for pedestrian recognition of self-driving cars [7, 10, 33]. Thus, underrepresentation at the highest levels of institutional research and innovation underscores the need to better support students with disabilities. Inaccessibility at the graduate level creates barriers to success for students with disabilities [21, 35], impeding the number of graduates who then enter the technology industry. We investigated how PhD students in computing and related fields bridge the chasm of inaccessibility at the doctoral level. We interviewed 12 blind and low vision and 7 deaf and hard of hearing (DHH) current and former computing doctoral students about the time and energy they dedicated to managing trivial and non-trivial access-related tasks, addressing ineffective accommodations, and self-advocating for solutions in service of improving inaccessibility. The findings presented in this paper highlight and investigate the circumstances that created additional responsibility for participants; this work represents a portion of findings from a larger project. Specifically, we found that participants employed a constellation of strategies to address inaccessibility and insufficient accommodations, adding to substantial overhead in terms of additional tasks they took on to manage such responsibilities. We identified myriad formal and informal forms of auxiliary effort that participants used to address inaccessibility, and we show how this additional labor constituted a *hidden burden* on top of expected graduate school responsibilities. Contributions of this work include empirical findings (1) contextualizing the kinds of additional labor that blind, low vision, deaf and hard of hearing PhD student participants encountered, (2) showing how participants traversed inaccessibility they experienced, including issues faced after they should have received accommodations. We present findings that emerged via an analytic lens of ableism, demonstrating how the additional labor they expended gave rise to a *burden of survival* that participants took on despite mechanisms in place ostensibly designed to help.

A note on terms: We cautiously describe our findings as a *hidden burden* that participants took on to manage accommodations necessary for their academic endeavors. We contrast and differentiate this notion of a hidden burden apart from ableist notions of "challenges"

[1] https://www.nsf.gov/statistics/srvydoctorates/
[2] Early versions of the SED asked graduates to indicate their disability identity while later versions asked about functional limitations. This change in wording may result in an overestimation of the number of doctoral students in computing who identify as having a disability [6, 28].

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