


# The Pandemic's Impact on Underserved Students' Technology Access and Course Progress: A Case Study

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## ABSTRACT

The pandemic hindered students' access to technology by exacerbating the digital divide, particularly for those from underserved populations, such as students of color and low-income students. This case study focuses on the unique experiences of information systems students drawn from a population of underserved students one year after the pandemic's onset. The study examines whether the students' perceptions of their access to technology and progress in technology courses is consistent with early literature on the pandemic. Pedagogical suggestions are provided to help faculty mitigate the negative factors that students described as hurting their progress in technology courses. Contrary to the initial literature on the pandemic, the majority of students reported no difficulty accessing technology. Surprisingly, the slight majority of students felt the pandemic had no impact or a positive impact on their technology course progress. The broad implication for the field of technology education is that the digital divide is not necessarily deepening one year into the pandemic.

## KEYWORDS

COVID-19 Pandemic, digital Divide, Digital Inequity, Information Systems, Online Education, Technology, Underserved Students

## INTRODUCTION

Students struggled to adapt to online learning on a compressed schedule in the midst of the COVID-19 pandemic. Existing research showed the pandemic hurt students' access to technology by exacerbating existing digital inequities, particularly for students from traditionally underserved groups, such as students of color and students from low-income households. The existing research also showed how the pandemic negatively impacted students' progress in their technical courses by forcing them to switch to online courses.

This case study examines whether one year after the pandemic's onset, information systems students' perceptions of their access to technology and technical course progress during the COVID-19 pandemic were consistent with the early literature on the pandemic. This research focuses on students

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from a population of underserved students. This paper begins with an overview of the related work, which supports the rationale for the study and the development of the propositions. After the presentation of the propositions the methodology is described, including the research study design, the participants, the materials, and the procedure. Next the results of the case study are presented and discussed in terms of how the findings supported or contradicted the propositions. The discussion also examines the factors related to students' perceptions of the pandemic's impact and pedagogical suggestions are provided to help faculty mitigate the negative factors that students described as affecting their progress in technology courses. The practical and managerial significance of the results are discussed, specifically in relation to the practical significance for technology educators and the managerial significance for college administrators. The limitations of this study and avenues for future research are explored. Finally, the conclusions and broader implications for the field of technology education are presented.

## **BACKGROUND**

The pandemic forced professors and students to pivot to a completely online model, despite the fact that not all students have equal access to the technology necessary to succeed in online courses. This review of the literature examines the impact of the pandemic on students' access to technology and their progress in their technical courses, with a focus on students from underserved groups. Groups that are considered underserved by higher education include students of color, low-income students, and first-generation students (Ashcroft, et al., 2021; Bragg, 2013; Green, 2006). Previous research from early in the pandemic shows that the abrupt switch to online courses negatively impacted students' access to technology and adversely affected their progress in technical courses.

### **Impact of the Pandemic on Students' Access to Technology**

The pandemic hurt students' access to technology by exacerbating existing digital inequity in the United States. Digital inequity occurs when students do not have access to appropriate technology for online coursework (Sahu, 2020). Lack of internet access and no working computer in the household are hallmarks of digital inequity (Katz et al., 2017).

#### *The Pre-Pandemic State of Digital Inequity*

Prior to the pandemic, 14% of U.S. households did not have internet access, with the majority of those households having incomes under \$50,000 per year (Morgan, 2020). A 2018 Pew Research study found nearly one in five U.S. teens had trouble finishing their homework due to a lack of internet access at home (Anderson & Perrin, 2018). Students who do not have access to technology at home are less likely to have technology skills than their peers (Williamson et al., 2020). Research over the past decade on digital inequality has shown there is a relationship between socioeconomic inequality and internet access (Schradie, 2020). The digital divide has been shown to strengthen existing patterns economic and social inequality (Katz et al., 2017; Sanders & Scanlon, 2021; Schradie, 2020).

#### *The Post-Pandemic State of Digital Inequity*

The early research on the COVID-19 pandemic shows the pandemic has only aggravated the existing problem of digital inequity across the United States. A 2020 survey of public university students found the pandemic worsened digital inequities, with students reporting difficulty accessing wi-fi, and as a result, falling behind in their online courses (Shin & Hickey, 2020). A survey of 2,913 undergraduates from thirty universities in the United States during April and May 2020 found students who experienced financial hardship during the pandemic had greater difficulty with internet access, access to computers, and challenges communicating with faculty in their online courses than students not reporting financial hardship (Katz et al., 2021). College students reported that one of

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