Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

# A Photo-Elicitation Study of Mental Health Challenges and Student Persistence through the COVID-19 Pandemic

**Cassandra R. Davis**

cnrichar@email.unc.edu

University of North Carolina at Chapel Hill

**Michael Grigsby**

The University of Southern California

**Aimee Yan**

University of North Carolina at Chapel Hill

**Sean D Hernandez Adkins**

University of North Carolina at Chapel Hill

**Research Article**

**Keywords:** Environmental disruptions, Equitable Schooling, Photo-Elicitation, Thematic Analysis, First-Generation, Higher Education

**Posted Date:** April 1st, 2026

**DOI:** https://doi.org/10.21203/rs.3.rs-8800395/v1

**License:** This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

**Additional Declarations:** No competing interests reported.

# Abstract

Research shows that disruptions to schooling are occurring more frequently than previously imagined. Schools close for days to weeks due to climate-induced disruptions (i.e., hurricanes), violent disruptions (i.e., school shootings), and even physical disruptions (i.e., prevalence of mold). In this study, we focused on the disruption of COVID-19 and examined how FGCS addressed challenges to their schooling and persistence. Here we examined the lived experiences of over 200 First-Generation College Students (FGCS) across six US universities in 2020–2021 and using a photo-elicitation approach. Participants submitted photographs of their personal and academic spaces alongside written reflections, which were analyzed using a researcher-led thematic analysis. The analysis revealed respondents facing mental health struggles, challenges around space, and inadequacy of environments. Some FGCS reported practicing resiliency, flexibility, and strength. This study contributes essential insights for educators and policymakers, emphasizing the crucial support needed for FGCS to navigate academic challenges during crises.


# INTRODUCTION

Research shows that disruptions to schooling occur more frequently than previously imagined. Schools now close for days to weeks due to climate-induced disruptions (i.e., hurricanes), violet disruptions (i.e., school shootings), and even physical disruptions (i.e., prevalence of mold). In 2018, Hurricane Florence disrupted schooling for students at the University of North Carolina Pembroke and the University of North Carolina Wilmington for an average of four weeks (Stancill & Eanesm 2018). Places like California State University, Pepperdine University, and the University of California, Davis, reportedly closed their doors for weeks as their students recovered from devastating fires (Grens, 2018).

In March 2020, university officials across the U.S. suspended face-to-face classes and shifted instruction to virtual platforms due to concerns around the COVID-19 pandemic. Students nationwide left college campuses with little assistance on how to adapt to the new norm of distance learning. While this drastic mid-semester school change posed a significant obstacle for all students, challenges were exacerbated amongst students with the highest need. Recent research has shown that these students represent students of color (Jones et al., 2022; Vazquez & Cortina, 2023) and students with disabilities (Soria & Coca, 2023). However, very little has been written about the experiences of First-generation College Students (FGCS) during this time. This paper aims to uncover how FGCS documented their schooling experiences during the pandemic through visual artifacts and storytelling.

FGCS, defined in this study as the first in their families to pursue a college education in the U.S., have historically faced numerous obstacles to academic success. Research indicates that FGCS are less likely to enroll in college and less likely to complete their degree once enrolled compared to their peers (Aruguete, 2017; Katrevich & Aruguete, 2017; Lohfink & Paulsen, 2005). Additionally, FGCS rely more heavily on on-campus resources throughout the academic year than continuing generation college students (CGCS)—students with at least one family member who has obtained a college degree (Soria et

al., 2022). The sudden shift to online learning during the pandemic disrupted access to these crucial resources, presenting a significant barrier to FGCS, who often navigate college with limited knowledge of the system and fewer available resources.

The COVID-19 pandemic caused massive disruptions across higher education, disproportionately impacting first-generation college students FGCS who already navigate structural barriers to academic success. While universities have largely returned to in-person operations, understanding how FGCS persisted through crisis remains critical, especially as other forms of disruption. This study uses participant-generated photo-elicitation to explore how FGCS documented their learning environments during the pandemic, combining photographs and written reflections to capture the challenges, adaptations, and resilience strategies they employed. By analyzing these visual-narrative pairings using inductive thematic analysis informed by grounded theory principles, we provide new insights into how FGCS experience and define “schooling spaces” under conditions of crisis. Therefore, to guide this study, we asked: *How are FGCS documenting their schooling experiences during an environmental disruption?*

## Review of Prior Literature

### *The Vulnerability of FGCS*

Previous studies have brought to light the vulnerability of FGCS within the higher education landscape, a vulnerability that was further heightened by the uncertainties of the COVID-19 pandemic. University officials also faced significant challenges in determining the best ways to support FGCS during the sudden transition to distance learning. Current research provides insights into the college experiences of FGCS and, to a limited extent, how the COVID-19 pandemic has impacted these students.

The economic fallout from the pandemic has hit low-income families particularly hard, exacerbating the existing challenges faced by FGCS (Berube & Bateman, 2020). With the sharp rise in unemployment rates, these families are experiencing heightened vulnerability, potentially widening economic disparities. Furthermore, the transition to remote learning introduced additional obstacles for FGCS, hindering their ability to stay connected to universities, academic networks, and essential resources. Despite these well-documented challenges, there is a noticeable lack of comprehensive information gathered directly from FGCS about the new barriers they faced during an environmental disruption.

The significance of graduating with a college degree for reducing economic disparities among FGCS cannot be overstated. Millennials with at least a bachelor's degree, as reported by the Pew Research Center (2014), outearn their peers without a degree by $15,500 (two-year degree/some college) or $17,500 (high school graduate) respectively. This educational attainment also correlates with lower unemployment and poverty rates. The National Center for Education Statistics data revealed that approximately 68% of FGCS with a bachelor's degree, four years post-graduation, were employed, earning an average salary of $45,000 (Cataldi et al., 2018).

Despite the potential benefits of graduating college, existing research consistently underscores the challenges FGCS face in their journey toward college graduation. The Postsecondary National Policy Institute (2018) reported that FGCS are less likely to complete their degrees within six years than their continuing-generation peers. Alarmingly, only 20% of FGCS earned their bachelor's degree during this period, compared to 49% of continuing generation students (RTI, 2019). Additionally, data from the Center for First-Generation Student Success highlighted demographic trends among FGCS, indicating that they are more likely to be female, attend school part-time, and identify as non-White (PNPI, 2018). These challenges are compounded at institutions such as Historically Black Colleges and Universities (HBCUs), where FGCS constitute approximately 60% of the student population, compared to 47% at public 4-year institutions and 43% at private non-profit 4-year institutions.

*Mental Health and COVID-19*

The COVID-19 pandemic significantly impacted mental health across various populations, with college students being particularly affected. The sudden shift to remote learning, social isolation, and the uncertainty surrounding the pandemic created a perfect storm of stressors (Gandara et al., 2024). For many students, the lack of in-person interactions and the loss of campus resources exacerbated feelings of anxiety, depression, and loneliness. According to a study by Fruehwirth and colleagues (2021), the prevalence of moderate to severe anxiety among college students increased from 18% in the fall of 2019 to 25% in the fall of 2020, with depression rates also seeing a substantial rise, underscoring the profound mental health challenges induced by the pandemic.

FGCS faced unique mental health challenges during the pandemic. Research indicates that 40.3% of FGCS experienced symptoms of major depressive disorder, and 44.6% exhibited signs of generalized anxiety disorder (Soria et al., 2020). Additionally, 72% of students reported that their psychological well-being worsened significantly since social distancing began (Black et al., 2020). FGCS often lack the support networks that continuing-generation students may take for granted, such as family members who have navigated higher education. This absence can intensify feelings of isolation and stress, particularly when coupled with the financial and academic pressures heightened by the pandemic (Olaniyan et al., 2023). The compounded stress of managing these insecurities, alongside academic responsibilities, has made the college experience particularly strenuous for FGCS during the pandemic.

The concept of student persistence has been extensively debated over the past three decades and underscores the importance of academic and social integration. Vincent Tinto's widely cited work (1993) emphasizes that connectedness within the college environment is crucial for student persistence. Although his work has faced criticism for not adequately addressing the experiences of students of color and those from marginalized groups (Guiffrida, 2006; Palmer et al., 2011; Tierney, 1999; Guiffrida, 2006), the fundamental idea that connectedness is pivotal remains relevant. For FGCS, creating these connections is essential not only for academic success but also for mental well-being.

Connectedness plays a critical role in mitigating mental health issues among all college students, including FGCS. This connectedness can come from peer networks, mentorship programs, and

involvement in campus organizations. However, the transition to remote learning disrupted these avenues of connection, leaving many FGCS feeling isolated and unsupported (Fruehwirth, 2021). Research indicates that even brief periods of social isolation can have long-term impacts on psychiatric symptoms, lasting up to three years (Brooks et al., 2020). Therefore, re-establishing these connections through virtual means or hybrid models is essential for supporting the mental health and academic persistence of FGCS in a post-disruption landscape.

*Theoretical Framework: Grounded Theory*

In our study, we employed grounded theory to explore the impact of repeated hazards on rural communities. *Grounded theory* is defined by Charmaz (2014) as a "systematic yet flexible" method for collecting and analyzing qualitative data to develop theories grounded in the data itself (p. 1). Unlike traditional methodologies that apply existing theories to data, grounded theory allows the data to inform and shape the theoretical framework (Lincoln & Guba, 1985). The process of developing theory through grounded theory is iterative and non-linear. It involves the constant comparative method, where data collection and analysis are conducted simultaneously and continuously compared to identify patterns and categories (Glaser, 1965; Glaser & Strauss, 1967; Strauss & Corbin, 1990). This method primarily relies on qualitative data obtained from interviews or focus groups, which provide rich, detailed insights necessary for theory construction (Creswell, 2011).

A key advantage of grounded theory is its ability to ground theoretical insights directly in real-world data, ensuring that the resulting theory accurately reflects the studied phenomena. This flexibility is crucial for addressing specific concerns or points of interest within a targeted population, making it highly adaptable to complex, real-world issues (Charmaz, 2014; Creswell, 2011). This approach was particularly valuable in our research due to the limited existing studies on resilience fatigue, allowing us to uncover and interpret alternative meanings and experiences within the data.

Using grounded theory we created a theoretical framework that did not force the data to fit an existing, potentially ill-fitting model. Instead, our theory emerged organically from the data, providing a nuanced understanding of how repeated hazards impact FGCS. This approach is essential for capturing the complexities and varied experiences of the population under study, offering insights that might be overlooked by more rigid methodologies (Charmaz, 2014; Creswell, 2011).

*Using Photos to Describe One's Space*

Researchers have long used photographs to help document a historical moment to assess how individuals cope with, respond to, and adapt to life altering change (Budig et al., 2018; Wang & Burris, 1994; Derr & Simons, 2020). More specifically, *Photovoice* is a research approach that allows participants to use photography and storytelling to critically assess a phenomenon (Wang & Burris, 1994). This process provides an alternative method for respondents to share their perspectives and give voice to those who are often ignored (Derr & Simons, 2020; Sackett et al., 2023). The primary objective of Photovoice is to grant participants the power to document and reflect on their own experiences,

surroundings, and circumstances while calling attention to these issues (Nykiforuk et al., 2011). Through Photovoice, participants take photos of their environments, discuss their interpretations to understand their challenges better, and then generate community-based solutions (Budig et al., 2018).

Similarly, a *Photo-elicitation Approach* is one that offers respondents the ability to sense-make by taking photographs and aligning with an in-depth discussion (Harper, 2002; Kyololo et al., 2023).
One of the most significant principles of using photos in this way
is that it empowers participants to represent themselves (Budig et al., 2018). Instead of being just the subject of research or documentation, participants become active contributors to their visual narratives and co-researchers responsible for creating knowledge. The methodology encourages individuals to photograph their surroundings, communities and lives to reflect their unique perspectives and experiences. The resulting images become a starting point for discussions, reflections, and analysis, enabling participants to share their photos and stories with researchers or community organizers (McBee, 2023). This process builds trust, creates a sense of community, and provides valuable data for further analysis (Kyololo et al., 2023).

There are several benefits to using photos within research. First, this process puts the power of representation in the hands of the participants, allowing them to document and share their own experiences and perspectives (Budig et al.,
2018). These methods can be particularly useful in giving marginalized or disadvantaged communities a voice. Secondly, all participants have an equal opportunity to contribute to the research through photography, making the process more inclusive and democratic (Wang & Burris, 1994). Next, photography lets participants provide a nuanced understanding of their given environment. They can provide a complex understanding of reality, as they capture a wider range of details and can be open to multiple interpretations (Ciolan & Manasia, 2017). Another benefit of Photovoice and the stories generated by the pictures is that it offers a rich data source for further analysis and understanding (Nykiforuk et al., 2011). Lastly using photos as a research
methodology has been used in a variety of settings, including health care and public health, education, economic and social inequalities, and environmental contexts, marking it as a widely used and applicable methodology (Derr & Simons, 2020; Sackett et al., 2023).

However, it is vital to acknowledge the potential limitations of using such methods. Photography may not be culturally or politically sensitive in specific contexts, and interpreting and analyzing photographs as research data requires caution since they can be open to multiple interpretations influenced by the photographer's intentions and perspectives (Tsang, 2020). Additionally, participants may face technical challenges or lack confidence in their photography skills, which could limit the quality and variety of visual data collected. There is also the risk of participants feeling exposed or vulnerable when sharing personal photographs, which may affect their willingness to participate fully or honestly. Overall, using photos is an effective research tool that can empower marginalized communities and provide a more inclusive and democratic approach to research and advocacy.

By granting individuals the means to document and share their realities, photos can generate insights that conventional research methods may fail to uncover.

This study is essential to understand how FGCS navigated schooling through an environmental disruption and the extent to which they were able to be resilient through a national pandemic. While we have research on persistence and barriers to persistence for FGCS (Author, 2021), we do not have visual artifacts on how FGCS were affected by a national pandemic and how they responded to schooling during this time. Very little research exists that directs college administrators, educators, and policymakers on best supporting FGCS' schooling needs during and after a disaster. Thus, this study would help fill a significant gap and would be used to support higher education institutions' responses to similar events (i.e., hurricanes, fires, and tornadoes, and others), specifically for students with the highest need.

# METHODS

The research team used a Photovoice methodology, The research team employed a photo-elicitation methodology, which involved administering surveys to FGCS followed and interviews. The surveys included questions prompting participants to upload photographs of their schooling and living spaces and critically reflect on these images. This paper presents findings specifically from the photographic portion of the survey collection. The team collected data across five sampled higher education institutions to evaluate how COVID-19 exacerbated inequalities for FGCS.

Our primary objective was to amplify the voices and experiences of FGCS during the pandemic to mitigate their challenges as they persist through college. To this end, the following research question guided our study: How are FGCS documenting their schooling experiences during the COVID-19 Pandemic? This section details the photo-elicitation methodology, research procedures, protocol development, and data analysis strategies used to analyze the images and corresponding reflections to understand how FGCS critically reflects on their learning environments through photos and narratives during the pandemic.

*Defining Photo-Elicitation and Participant-Generated Photography*

This study used participant-generated photo-elicitation as the primary method to explore FGCS experiences during COVID-19. Photo-elicitation is a qualitative research approach in which photographs are used to evoke deeper reflection, interpretation, and meaning, either through interviews or as standalone data (Glaw et al., 2017; Harper, 2002). In this project, participants were asked to upload a photo of their primary "schooling space"—the place where they completed most of their coursework—along with a short written reflection describing the image and explaining what an equitable learning environment meant to them during the pandemic. These participant-generated images, sometimes referred to as *autophotography* (Ziller, 1990; Glaw et al., 2017), provided both visual and narrative data, which we analyzed thematically.

Unlike the participatory action orientation of *Photovoice*, where participants engage in selecting final images, co-constructing themes, and generating community-based solutions (Wang & Burris, 1994; Budig et al., 2018), our study employed researcher-led analysis of the images and accompanying texts. We applied iterative coding, constant comparison, and inductive theme development informed by grounded theory principles to capture the layered meanings embedded in the visual-narrative dataset. This approach allowed us to highlight both the challenges and resilience strategies of FGCS during COVID-19, centering their lived experiences while maintaining analytic rigor (Glaw et al., 2017; Harper, 2002).

**Procedures**

The team administered an anonymous online survey through Qualtrics in Fall 2020 and Spring 2021 to FGCS across six university campuses. We collected photographs and responses from 181 FGCS in the fall of 2020 and 56 FGCS in the spring of 2021. Participants were asked to take pictures of their schooling space, define equitable schooling, and explain how it applies to their experiences. Additionally, respondents documented the time they spent in their space, whether it was shared with others, and described typical activities performed in that space. The research team utilized Microsoft Excel to analyze open-ended and closed-item responses, identifying and tallying themes across the open-ended responses.

**Participants**

We administered the survey to undergraduate students at six universities in four states within the US. Four identified as public, two as a Historically Black College and University (HBCU), and one as a private, liberal arts school. We did not track where students' affiliation in Fall 2020 and only have data for Spring 2021. Our data shows an overrepresentation of students attending a public university for Spring 2021.

*Table 1. Students' College Affiliation in Spring 2021*

| | **Spring 2021** | |
|---|---|---|
| **Response** | % | Count |
| Public | 79.4 | 85 |
| HBCU | 17.8 | 19 |
| Private, liberal arts | 2.8 | 3 |
| Total | 100.0 | 107 |

The team wanted to ensure that only FGCS were responding to the survey. To do this, we asked respondents whether one or both of their parents attended or completed college. We removed students

who indicated that one or both completed college and those who selected “other.” Our justifications align with the Center for First-Generation Student Success’ definition on who classifies as a FGCS (2018). Our final sample was 182 respondents in the fall of 2020 and 106 respondents in the spring of 2021. A breakdown of our results can be found in Table 2.

*Table 2. Survey respondents’ parents’ affiliation to college*

| | **Fall 2020** | | **Spring 2021** | |
|---|---|---|---|---|
| **Response** | % | Count | % | Count |
| Neither of my parents went to college | 57.2 | 115 | 58.3 | 70 |
| One or both of my parents went to college but neither completed a college degree | 23.4 | 47 | 21.7 | 26 |
| One or both of my parents completed a two-year college degree | 10.0 | 20 | 8.3 | 10 |
| One or both of my parents completed a four-year college degree or higher | 8.0 | 16 | 10.0 | 12 |
| Other: | 1.5 | 3 | 1.7 | 2 |
| Total | 100.0 | 201 | 100.0 | 120 |

### Analysis

To select photographs for analysis, we employed a systematic approach focused on aligning with the key themes emerging across the submitted images. Photos were chosen based on their visual interest, clarity, and relevance to the themes identified in the participants’ written narratives. The research team reviewed each image to ensure it effectively represented the core themes of the study and that consensus was reached on the connection between the image and the corresponding text. This method ensured that the selected images provided a meaningful visual component to the textual data and accurately reflected the experiences of FGCS during the pandemic across our sampled universities.

## RESULTS

This section documents how FGCS described their schooling spaces during the early stages of the COVID-19 pandemic. In the following sections, we expose how surveyed students described their connection to these spaces and then include their written and visual imagery of their schooling areas. Regarding their connection to the spaces, we asked responding FGCS to describe the location and use of their schooling spaces during the pandemic.  For instance, we asked FGCS to identify where they spent their time attending classes and completing homework.  Next, we asked students to summarize how long they remained in these spaces to complete their work. Lastly, we asked respondents to indicate the extent to which the spaces were shared with anyone (i.e., family members, roommates, and others).

Following, we summarized the key themes that emerged from surveyed FGCS' photos of schooling spaces.  Lastly, we asked respondents to take a picture of their space, describe what they saw, and assess what a suitable learning environment resembles.

**Connections to Space**

First, we asked FGCS to identify their schooling spaces during the pandemic. Not surprisingly, most FGCS respondents from Fall 2020 (N=84) and Spring 2021 (N=43) identified their off-campus home as the place where they attended virtual classes (Table 3). Our results also showed that some still had the opportunity to stay on campus at the peak of the pandemic. One student stated, "[I'm] in one of my school's dorm buildings – I do not have reliable internet at home, so I have been granted an exception to remain on campus when most other students were asked to leave." Not all universities allowed students to stay; however, those that remained could use resources available on campus that they would not have access to otherwise. We also noted that very few respondents used their job site as a place to attend class and do their homework.

*Table 3. Locations of FGCS' Schooling Spaces*

| **Category** | **Fall 2020 Count** | **Spring 2021 Count** |
|---|---|---|
| Home off-campus | 84 | 43 |
| Bedroom | 61 | 22 |
| Home on-campus (i.e., dorm) | 24 | 11 |
| Dining room/Kitchen | 15 | 1 |
| Living room | 12 | 8 |
| Designated office | 7 | 2 |
| Jobsite | 2 | 3 |
| Other | 19 | 20 |

A consistent finding showed that respondents indicated the type of room where they worked. Results showed that respondents cited working in their bedrooms, living rooms, dining rooms, kitchens, or home offices. FGCS mentioned their bedroom as the most common room to function as their working space, with 61 respondents (33.3 percent) in the Fall and 22 respondents (20.8 percent) in the Spring. One respondent said, "This is my desk set up in my bedroom (it's messy, but I figured it shows what it looks like when it's actually in use)." Results also showed that FGCS used their dining rooms and kitchens as an alternative workplace. Additionally, respondents were more likely to use this space in the Fall (8.2

percent) than in Spring (0.9 percent). The least identifiable space was a home office with fewer than ten responses indicating that such spaces were used in Fall and Spring.

Next, we asked FGCS to indicate how long they spent in their schooling space. Most students remained in their spaces for over three hours per day in the Fall 2020 (87.6 percent) and the Spring 2021 (72.1 percent). Survey results also showed that FGCS spent less time in their spaces during the Spring semester compared to the Fall (Table 4). According to student respondents, 4.7 percent of FGCS remained in their schooling spaces for two hours or less during Fall 2020, in contrast to 14.4 percent of FGCS in Spring 2021.

*Table 4. Amount of Time FGCS Remained in Schooling Space*

| | **Fall 2020** | | **Spring 2021** | |
|---|---|---|---|---|
| **Response** | % | Count | % | Count |
| Less than 1 hour | 2.3 | 4 | 9.6 | 10 |
| 1 hour and 1 minute - 2 hours | 2.3 | 4 | 4.8 | 5 |
| 2 hours and 1 minute - 3 hours | 7.9 | 14 | 13.5 | 14 |
| More than 3 hours | 87.6 | 156 | 72.1 | 75 |
| Total | 100 | 178 | 100.0 | 104 |

We then asked FGCS to indicate if their schooling space was shared with others. Students remained consistent between Fall 2020 and Spring 2021, with roughly half sharing their spaces and the other half not (Table 5). Survey results showed a slight uptick in the percentage of students who shared their space in Spring 2021 (51.9 percent) compared to Fall 2020 (49.7 percent). FGCS also mentioned cohabitating with family members (i.e., parent, sibling, or child), roommates, and partners. One respondent stated, “My kids’ playroom has become all three of our zoom [spaces].”

*Table 5. The Extent FGCS Share Schooling Space*

| | **Fall 2020** | | **Spring 2021** | |
|---|---|---|---|---|
| **Response** | % | Count | % | Count |
| Yes | 49.7 | 91 | 51.9 | 56 |
| No | 50.3 | 92 | 48.2 | 52 |
| **Total** | 100.0 | 183 | 100.0 | 108 |

**The imagery of schooling spaces**

Overall, FGCS collectively revealed various experiences and challenges faced within their schooling spaces. These experiences encompass the emotional impact of isolation, struggles with space and

privacy, the need for suitable learning environments, and resiliency in adverse conditions.

*Isolation and mental health challenges*

Our findings revealed that FGCS addressed feelings of isolation and topics related to their mental health challenges. We noted that 31 of 170 open-ended responses (18.2 percent) addressed these topics in the Fall 2020 survey. However, we also saw a slight decrease in responses from the Spring 2021 survey, representing 14 of 94 open-ended comments (14.9 percent). The decrease in responses could suggest that students were more likely to adapt to the pandemic and less likely to experience mental health challenges. It could also mean the opposite, where those most troubled by the pandemic could not express their concern through the survey. Regardless of the decline in responses, students consistently described the COVID-19 pandemic as negatively impacting their mental health.

Many FGCS mentioned the emotional toll the pandemic had on their health, explicitly citing feelings of exhaustion, a lack of motivation, and loneliness. They used images of their schooling spaces to document their mental health challenges. One student reflected on the strain caused by remote learning and stated, “This picture speaks on behalf of how burnt out I am from online classes. I always used to go out to study at a library or public place for motivation, but I've found it difficult to even leave my own bed to study or do work.” Another respondent expressed the struggle to find motivation while studying, noting, "I've found it difficult to even leave my own bed to study or do work."

Within this theme, survey respondents often addressed feelings of loneliness. One student stated, “[I’m] very lonely when I am in class, I sit in my room in the corner.” Another student described their picture as representing the forced isolation caused by the pandemic. They stated that their pictures represented “the life of a student who lives in a dormitory and is not allowed to have any friends in her room to study with.” While another student provided a self-portrait, and when asked to describe the picture, the student stated, “She’s trapped.” These reflections and others emphasize the essential need for social connections and mental health support during isolating and challenging times. Students defined themselves as “caged birds” looking for an opportunity to be released back into the world.

The FGCS described taking this photo (Image I) in their off-campus bedroom, where they spent multiple hours daily. The student described that this space used to represent joy and excitement. However, the desk in the picture now carries the emotional weight of the “stress, pain, and fatigue” this participant grew accustomed to throughout the pandemic. For this person, a suitable learning environment would be the opposite of their current space: in an on-campus library surrounded by other students or friends and studying alongside them. This space reflected the isolation the participant felt while classes were online as they did not share their space with anyone else.

*Space & privacy*

A recurring theme is the shortage of space, privacy, and organization in FGCS’ schooling spaces. Roughly 14 respondents (8.2 percent) in the fall and three respondents (3.2 percent) in the spring made

comments that addressed their overall privacy concerns. Students remarked that their places were “noisy” or “difficult to concentrate” due to the influx of crowding college roommates or family members. One respondent stated, "My bedroom isn't a good place to study. I have no desk area, so I do everything from my bed." These challenges are mirrored in the description of another student's study space, “This picture says that I have limited space and that I do everything here from eating, to studying, to working, and relaxing. It is really hard to create boundaries between work and play in this space.” Another FGCS described, “It has been a unique way of living and we have [grown] tired from being cooped up inside for so long.” These responses underscore the difficulties of finding conducive study environments amidst cramped and cluttered spaces.

In Image 2, the FGCS respondent indicated taking the picture in their bedroom and described working in their space for more than three hours daily. As described by the respondent, their picture represents their lack of space and overwhelming work. The sticky notes illustrate their “fleeting thoughts,” while the laptop and tablet are emblematic of how their “work never seems to have enough space.” The respondent stated, “The calculator, earbuds, and mouse all fight for the same small space. My water on the other side is frequently knocked off the desk. All to be closed and put away at the end of the day, frequently at midnight.” When asked to describe a suitable space, the student argued that learning requires “many” and “necessary tools” that also include enough space – which they also described as not having.

Another example is provided in *Image* 3 and reflects that of an FGCS who has made a space within their living room in their off-campus apartment. The student described being in this spot for most of the day, which includes their time in Zoom classes and completing homework. They also admitted that this space was a shared one and created it out of necessity without making a significant financial contribution to this space. The student stated, “I made [due] with what I could without spending too much money.” When asked to describe a suitable schooling space, the student described the convenience of using several public spaces open to students on campus. They stated, “I used to study on campus in libraries, the student union, or outside at a table. I liked to do my work in between classes because it freed up my nights to spend time with friends.”

*Unsuitable study environment for learning*

Next, our findings revealed that several FGCS respondents expressed dissatisfaction with their study environments, characterizing them as unsuitable for effective learning. Roughly 24 of 170 comments (14.1 percent) from the fall semester and 7 of 94 comments (7.4 percent) in the spring semester represented students who described their learning spaces as unsuitable. One respondent noted, "It's almost impossible to actually focus here." This quote underscores the importance of an appropriate workspace for academic success. Another respondent mentioned the impact of disruptions, stating, "You cannot focus upstairs because everyone is up there, therefore [there are] too many distractions." This quote highlights the challenges of finding a quiet and focused environment during the pandemic.

As mentioned earlier, FGCS survey respondents described using alternative sites as places to facilitate schooling. These locations represented dining rooms, kitchens, extended family members' homes, job sites, and even beds within their rooms. As one respondent argued that their bedroom was not a suitable place to study and caused them to be less productive than if they studied on campus. The student stated, "My bedroom isn't a good place to study. I have no desk area, so I do everything from my bed. As a lot of research says, you can be a lot more productive when you have a space designated to work, and in this case for me, that would be school." Another respondent stated that the dining room table could serve as an ideal place for schooling. They also acknowledged that "many students are using it as a study space, especially those students who may not have access to a desk."

In Image 4, the student presents their schooling space at the family's kitchen table. The individual described being within this space between 9 am and 11 am daily and roughly 4 to 5 days each week. The picture shows a space where multiple family members work in unison and eat snacks. The respondent described the space as a disorganized shared place that prohibits one from focusing on one's work. When asked to describe a suitable space, the respondent recalls their moments at a campus library, "A small quiet area with a desk, computer, soft lighting, and a window. Like the upper floors of the library at one of the desks hidden behind the bookshelves."

Students repeatedly mentioned instances where they lacked resources such as reliable internet, stable desks, and comfortable chairs. One FGCS respondent provided an image of their schooling space at their sister's residence since the internet at home was unreliable. They indicated being in the room from 9 am to 3 pm, Monday through Friday but avoided the weekends so that their sister gets a break. The student remarked,

*I am currently in my baby niece's room. She is currently too small to stay here so I use it as my study place. I have to go over to my sister place because I have awful internet back at home.*

To the respondent, a suitable space is one that includes a comfortable, neat, and a reliable internet-equipped environment.

*Positive/Resilience despite challenging situations*

Previous scholarship provides examples of FGCS remaining resilient and persisting to graduation (Author, 2021; Katrevich & Aruguete, 2017). In this study, we saw how FGCS navigated schooling and persevered to complete the semester. Despite facing challenging circumstances, many respondents described a sense of determination to graduate. As one respondent declared, "I am still capable of achieving work amidst a global pandemic." Roughly 15 of 170 comments (8.8 percent) in the fall semester and 4 of 94 comments (4.3 percent) from the spring semester mentioned being resilient during the pandemic. The nationwide shutdown forced FGCS to hone in on their academic priorities. One respondent stated that their "picture shows dedication and resilience to continue to work hard towards a degree even during these tough online learning conditions."

In Image 6, this FGCS took a picture of their private space at home and described it as one where they work four days a week for more than three hours per day. The respondent recalled having fewer items to support schooling during previous semesters but deemed their current office space evoked a sense of growth.  The student stated,

*My image would say, it's a start. It is better than where it was when the Spring 2020 semester ended (no desk, no chair, no fridge, no lamp, and no organizational items), but it is a working progress. It is sustainable and it gets the job done for the most part.*

When asked to describe a suitable space, the respondent articulated that it is a place where they can focus entirely on their assignments without disruptions, interruptions, and "unnecessary noises."

Respondents also addressed staying positive despite facing formidable challenges. Overall, 34 of 170 comments (20.0 percent) from the fall semester and 7 of 94 comments (7.4 percent) from the spring semester focused on staying positive during a tumultuous period. One respondent talked about making the best of their situation, stating, "[I am] making the best of a small and cluttered space," illustrating their determination to adapt and succeed in less-than-ideal conditions. Another respondent shared, "I try to keep my workspace organized since I feel like that is something that I CAN control during this pandemic…it shows growth, discipline, and change." This quote demonstrates the student's commitment to personal growth and adaptability amidst challenging circumstances.

Another FGCS presented a picture of their space in a distant relative's house. The student stated that they used the dining room table as their desk. The respondent also described sitting in this space five days a week, over three hours a day, since they attended class, completed homework, and ate in this space. When asked to describe their picture, the respondent stated,

*My picture says that I have lots of notes to take, lots of books to read, and that I'm up to my ears in work. It also says that I have to keep treats handy so I can bribe my cat to leave me alone while I'm working. What it doesn't say is that I love every minute of learning and studying.*

This respondent identified as a non-traditional FGCS who worked for over 20 years and recently decided to return and finish their degree. The FGCS described remaining positive and thankful for their career change and stated,

*Having an unfulfilling career and extremely stressful job led me here, and I wouldn't go back for anything. Even with COVID, being alone in the house most days, and taking all remote classes, I'm a million times happier than I was six months ago.*

To them, remaining optimistic about their current circumstances proved easier when thinking about their past career, regardless of their uncomfortable working space.

# DISCUSSION

While the likelihood that post-secondary schools face another worldwide pandemic may be low, the chances that they encounter another shutdown due to a climate-induced disaster are high. Disasters are increasing in frequency and intensity due to climate change. Moreover, with little change in policies to combat emissions and other toxins contributing to climate change, the likelihood of students facing a future event is great (Davis, 2023). The results of this paper can be used to understand how to support FGCS when colleges and universities are forced to shut down due to a disastrous event. Based on our research study's findings, we compiled the following suggestions for supporting and caring for students during the subsequent disaster-related school closing.

- **Enhance Mental Health Support Services:** Increase access to mental health resources and counseling services, including virtual counseling options, online support groups, and readily available mental health information and resources. Implement regular check-ins with students to monitor their emotional well-being and provide timely support.
- **Provide and Expand Existing Study Space Resources:** Establish or expand dedicated study spaces on campus equipped with desks, chairs, and a quiet environment for practical work. Offer flexible arrangements for on-campus study spaces to accommodate varying schedules and needs. Explore partnerships with local libraries, businesses, or community organizations to provide additional study spaces.
- **Technology and Infrastructure Improvements:** Ensure students can access reliable internet and necessary technology resources for remote learning. Provide technical support and assistance to students facing connectivity issues or technology-related challenges. Develop policies that facilitate lending essential technology equipment to students in need.
- **Training and Support for Online Learning:** Offer training programs and resources to help students adapt to online learning, manage time effectively, and maintain motivation.
- **Flexible Academic Policies:** Consider more flexible academic policies, including pass/fail grading options or extended deadlines, to accommodate students facing exceptional challenges during remote learning and beyond.
- **University Community Engagement:** To combat feelings of isolation foster a sense of community and engagement through virtual or socially distanced events, clubs, and extracurricular activities.
- **Financial Support and Scholarships:** Expand financial aid options and scholarships to assist students facing economic challenges, such as job loss or increased living expenses during the pandemic and beyond.
- **Regular Communication and Feedback:** Maintain open lines of communication, including anonymous feedback channels, with students to understand their evolving needs and challenges. Seek students' feedback on their experiences and use it to improve support services and policies continuously.
- **Resilience and Well-being Programs:** Develop programs that promote resilience, stress management, and overall well-being among students. These programs could include mindfulness and self-care workshops, peer support networks, and stress-reduction strategies.

- **Research and Data Collection:** Encourage ongoing research and data collection on the students' challenges in their study environments to stay informed about evolving needs and experiences beyond the pandemic and future climate-induced disasters.

# CONCLUSION

Surveyed FGCS had much share about their schooling experiences during the initial stages of COVID-19. While many used their photo to document their mental health struggles, others used their photos to show either a lack of privacy or a general inadequacy of their learning environment. Nevertheless, some FGCS reported feeling even more steadfast in their goal of being the first in their family to graduate. Respondents used their photos to document their interpretation of remaining resilient. FGCS exemplified courage by sharing their photos and perspectives on equitable schooling. Their voices provide practical guides on supporting students who are most in need, especially as they persist through post-secondary education during unprecedented times.

# Declarations

*Ethical approval*

We received IRB approval from the University of North Carolina at Chapel Hill with the identifier 20-1312. This study is not a clinical trial and does not have a trial number. This study also did not go through the formal Approval Committee process since this was a non-biomedical study.

*Consent to participate*

Informed consent was required to participate in the study given that our research study used human subjects. Every respondent that participated provided informed consent. All respondents were above the age of 18 and did not require consent from a parent or legal guardian. Their informed consent gave the research team access to all uploaded images and survey responses. It should be noted that no one expressed concern about the study.

*Consent to publish*

By giving us their informed consent for the study, respondents acknowledged that the researchers could publish all items including survey responses, direct quotes from open-ended responses, and photographs.

*Data Availability Statement*

The datasets generated during the current study are available from the corresponding author on reasonable request. However, images collected from respondents are not publicly available since they may provide identifiable information and thus cannot be shared as requested by our institutional IRB.

DECLARATION OF FUNDING SUPPORT

National Science Foundation – funded Social Science Extreme Events Research (SSEER) network and the CONVERGE facility at the Natural Hazards Center at the University of Colorado Boulder, the North Carolina Scholars Strategy Network, and the Faculty of Color and Indigenous Faculty Fund at the University of North Carolina at Chapel Hill. Additionally, this project is also supported by the North Carolina Collaboratory at the University of North Carolina at Chapel Hill with funding appropriated by the North Carolina General Assembly via the American Rescue Plan Act o 2021 (H.R. 1319) (federal award identification number SLFRP0129).

DECLARATION OF INTEREST STATEMENT

The authors report there are no competing interest to declare.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All human-related procedures were performed in accordance with relevant guidelines and regulations through the University of North Carolina at Chapel Hill's IRB and Office of Human Research Ethics.

CONSENT TO PUBLISH

The researchers obtained informed consent from all respondents.

# References

1. Berube, A. & Bateman, N. (2020, April 3). Who are the workers already impacted by the COVID-19 recession? Brookings. Retrieved from: https://www.brookings.edu/research/ who-are-the-workers-already-impacted-by-the-COVID-19-recession/
2. Black, V. G., Martinez, G. P., & Gonzalez, S. T. (2020). COVID-19 impact on first-gen students: Findings from the COVID-19 First-Gen Survey. San Marcos, TX: Texas State University.
3. Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessley, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. The Lancet, 395(10227), 912–920. doi:10.1016/S0140-6736(20)30460-8.
4. Budig, K., Diez, J., Conde, P., Sastre, M., Hernán, M., & Franco, M. (2018). Photovoice and empowerment: Evaluating the transformative potential of a participatory action research project. *BMC Public Health*, *18*(1), 432. https://doi.org/10.1186/s12889-018-5335-7
5. Charmaz, K. 2014. Constructing grounded theory. Sage.
6. Ciolan, L., & Manasia, L. (2017). Reframing Photovoice to Boost Its Potential for Learning Research. *International Journal of Qualitative Methods, 16*(1). https://doi-org.libproxy.lib.unc.edu/10.1177/1609406917702909
7. Creswell, J.W. (2011). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.). Upper Saddle River, NJ: Pearson/Merrill Prentice Hall.

8. Author, H. Hartman, M. Turner, T. Norton, J. Sexton, D. Mendez, J. Mendez. (2021). “Listen to the Feedback of Students”: First-Generation College Students Voice Inequalities in Schooling Brought on by the COVID-19 Pandemic. *Journal of Student Retention: Research, Theory & Practice*. https://doi.org/10.1177/15210251211066302
9. Derr, V., & Simons, J. (2020). A review of photovoice applications in environment, sustainability, and conservation contexts: Is the method maintaining its emancipatory intents? *Environmental Education Research*, *26*(3), 359–380. https://doi.org/10.1080/13504622.2019.1693511
10. Fruehwirth, J. C., Biswas, S., & Perreira, K. M. (2021). The COVID-19 pandemic and mental health of first-year college students: Examining the effect of COVID-19 stressors using longitudinal data. PLoS One, 16(3), e0247999. doi:10.1371/journal.pone.0247999.
11. Gandara, E., Santana, E., Samman, E., Dixon, B., & DeConge, M. (2024). Exploring first-generation student experiences during the COVID-19 pandemic and its influence on their social isolation: A photovoice project. Journal of American College Health. doi:10.1080/07448481.2024.2360406.
12. Glaser, B.G. (1965). The constant comparative method of qualitative analysis. Social problems, 12(4), 436-445.
13. Glaser, B.G., & Strauss, A.L. (1967). The discovery of grounded theory: Strategies for qualitative research. New Brunswick, NJ: Aldine Transaction.
14. Grens, K. (2018, November 14) College campuses close as wildfires ravage California. Retrieved from: https://www.the-scientist.com/news-opinion/college-campuses-close-aswildfires-ravage-california-65095
15. Guiffrida, D. (2006). Toward a cultural advancement of Tinto’s theory. The Review of Higher Education, 29(4), 451–472. https://doi.org/10.1353/rhe.2006.0031
16. Harper D. (2002). Talking about pictures: A case for photo-elicitation. *Visual Studies*, 17(1), 13–26. https://doi.org/10.1080/14725860220137345
17. Jones, M.K., Leath, S., Latimer, K., Lawson, E., & Briones, M. (2022). The Impact of COVID-19 on Black College Students' Mental Health. *Journal of College Student Development 63*(3), 239-254. https://dx.doi.org/10.1353/csd.2022.0021.
18. Katrevich A.V., & Aruguete, M.S. (2017) Recognizing challenges and predicting success in first-generation university students. *Journal of STEM Education*, 18(2), 40-44.
19. Kyololo, O. M., Stevens, B. J., & Songok, J. (2023). Photo-Elicitation Technique: Utility and Challenges in Clinical Research. *International Journal of Qualitative Methods*, *22*. https://doi.org/10.1177/16094069231165714
20. Lincoln, Y.S., & E.G. Guba. (1985). Naturalistic inquiry. Sage.
21. Lohfink, M. M., & Paulsen, M. B. (2005). Comparing the determinants of persistence for first-generation and continuing-generation students. *Journal of College Student Development*, *46*(4), 409-428.
22. McBee, R. L. (2023). “It Really Put a Change on Me”: Visualizing (Dis)connections within a Photovoice Project in Peterborough/Nogojiwanong, Ontario. *Social Sciences*, *12*(9), Article 9.

https://doi.org/10.3390/socsci12090488

23. Nykiforuk, C. I. J., Vallianatos, H., & Nieuwendyk, L. M. (2011). Photovoice as a Method for Revealing Community Perceptions of the Built and Social Environment. *International Journal of Qualitative Methods*, *10*(2), 103–124.
24. Olaniyan, M., Magnelia, S., Coca, V., Abeyta, M., Vasquez, M., Harris III, F., & Gadwah-Meaden, C. (2023). Two pandemics: Racial disparities in basic needs insecurity among college students during the COVID-19 pandemic. The Hope Center at Temple University.
25. Palmer, R. T., Davis, R. J., & Maramba, D. C. (2011). The impact of family support on the success of black men at an historically black university: Affirming the revision of Tinto's Theory. Journal of College Student Development, 52(5), 577–597. https://doi.org/10.1353/csd.2011.0066
26. RTI International. (2019). First year experience, persistence, and attainment of first-generation college students. NASPA. Retrieved from: https://firstgen.naspa.org/files/dmfile/FactSheet-02.pdf
27. Sackett, C. R., Rapa, L. J., & De Alba, R. E. (2023). An exploration of teens' perspectives of poverty through photovoice: Implications for counselors. *Journal of Multicultural Counseling and Development*, *51*(2), 104–115. https://doi.org/10.1002/jmcd.12242
28. Soria, K.M., & Coca, V. (2023). Food Insecurity Among College Students with Disabilities During the COVID-19 Pandemic. *Journal of College Student Development 64*(1), 102-107. https://dx.doi.org/10.1353/csd.2023.0005.
29. Soria, K. M., Horgos, B., Chirikov, I., & Jones-White, D. (2020). *First-generation students' experiences during the COVID-19 pandemic*. SERU Consortium, University of California - Berkeley and University of Minnesota.
30. Soria, K. M., Kelling, C., Mossinghoff, M., & Beahm, R. (2022). First-generation college students' mental health during the COVID-19 pandemic. Journal of First-Generation Student Success, 2(2), 97–117. doi:10.1080/26906015.2022.2070442.
31. Stancill, J, & Eanes, Z. (2018, September). Strom-battered UNCW will tentatively resume classes Oct.1.UNCP classes start Tuesday. The News & Observer. Retrieved from: https://www.newsobserver.com/news/local/article218790050.html
32. Strauss, J., & Corbin, A. (1990). Grounded theory research: Procedures, canons, and evaluation criteria. *Qualitative Sociology*, 19(1), 418-427.
33. The Postsecondary National Policy Institute [PNPI]. (2018). First- generation students in higher education. Retrieved from: https://pnpi.org/first-generation-students/
34. Tierney, W.G. (1999). Models of minority college-going and retention: Cultural integrity versus cultural suicide. *Journal of Negro Education, 68(1),* 80-91.
35. Tinto, V. (1993). Leaving college: Rethinking the causes and cures of student attrition (2nd ed.). University of Chicago Press.
36. Tsang, K. K. (2020). Photovoice Data Analysis: Critical Approach, Phenomenological Approach, and Beyond. *Beijing International Review of Education*, *2*(1), 136–152. https://doi.org/10.1163/25902539-00201009

37. Vazquez, M. & Cortina, J. (2023). Hispanic/Latinx college students' mental health during the COVID-19 pandemic: The effects of familismo and self-efficacy. Journal of Latinos and Education, 23(1), 1124-1135.
38. Wang C. C., Burris M. A. (1994). Empowerment through photo novella: Portraits of participation. *Health Education Quarterly*, 21(2), 171–186. https://doiorg.libproxy.lib.unc.edu/10.1177/109019819402100204

# Figures

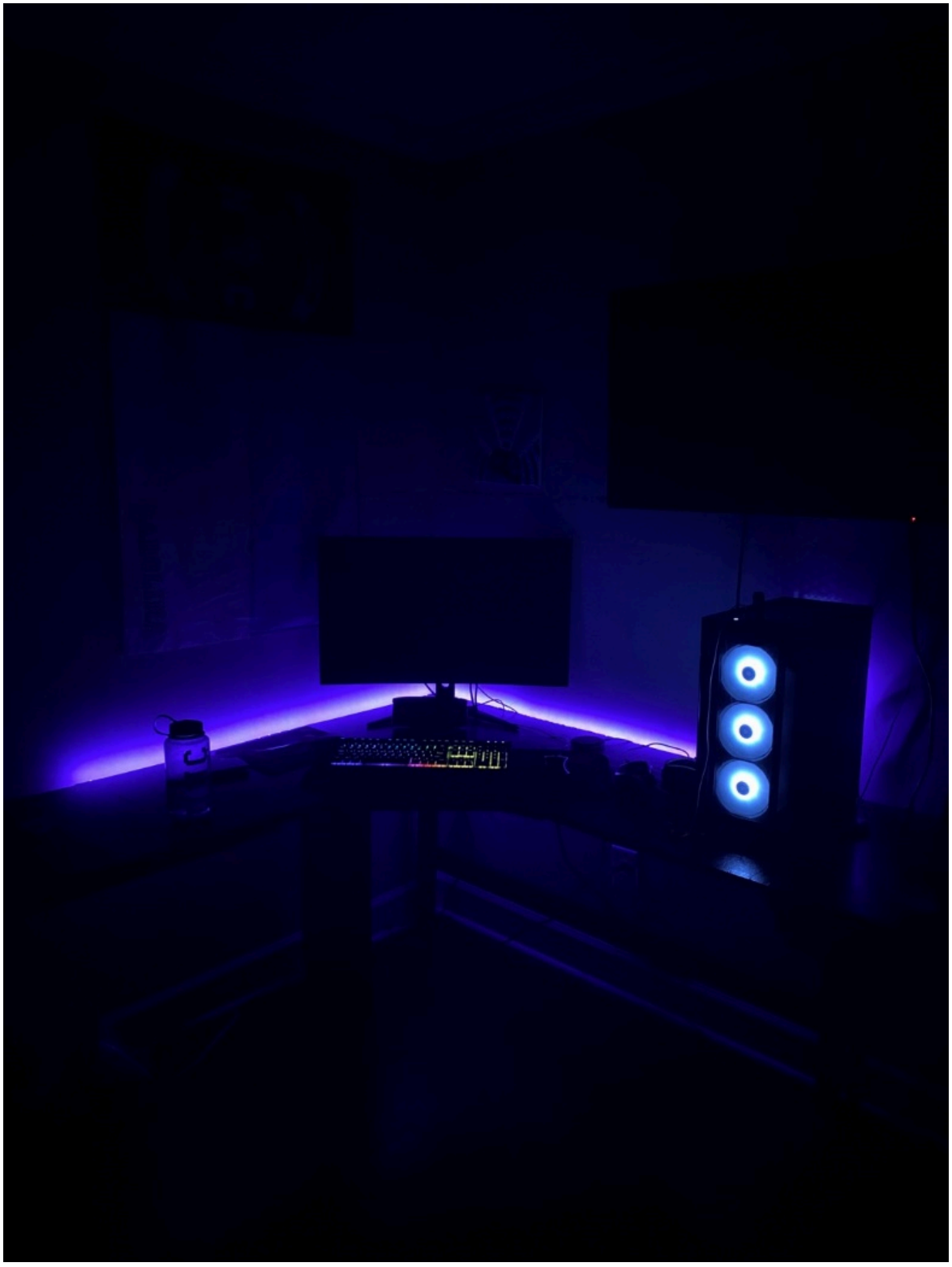


**Figure 1**

*The Blue Light Space*




**Figure 2**

*Sticky Notes Space*



**Figure 3**

*An Economical Space*




**Figure 4**

*A Shared Space*

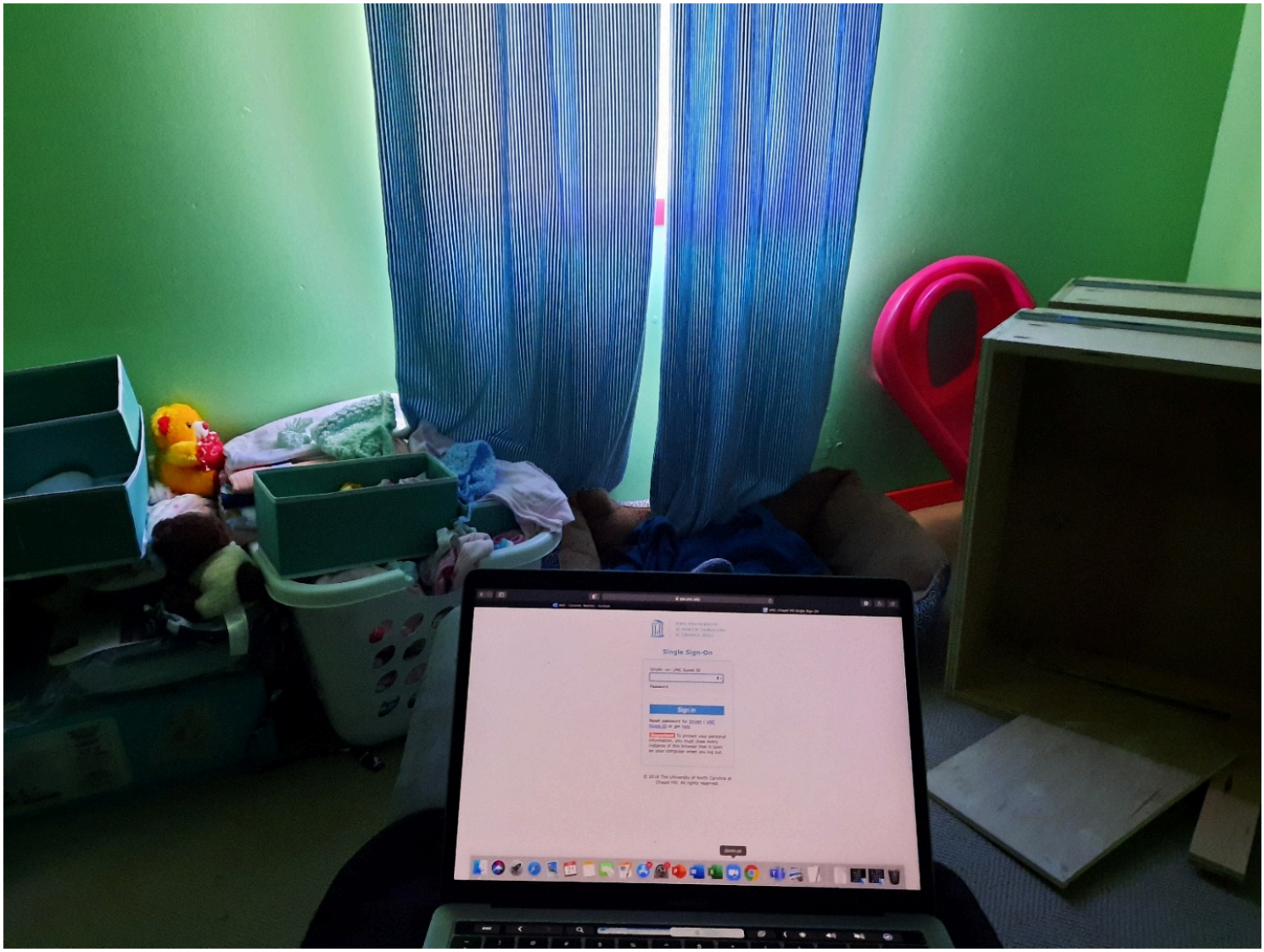



**Figure 5**

*A Sibling's Place*




**Figure 6**

*A Sustainable Space*




**Figure 7**

*A Cat's Space*