Virtual Learning Experience for Adolescents
By Ella Scanga

Department of Sociology, University of Colorado Boulder
Defended on March 28th, 2022

Thesis Advisor:
Dr. Don Grant, Department of Sociology

Honors Council Representative:
Dr. Amanda Stewart, Department of Sociology

Thesis Third Reader:
Dr. Kathryn Wiley, Department of Education

Acknowledgments

I will start by thanking my defense team, for consistently supporting me through this process by answering questions, hopping on weekly Zoom calls, and reading drafts when I finished them.

I also thank the participants in this study, who attended interviews with integrity, authenticity, and honesty.

I want to thank the professors in CU Boulder's Education department, including Roudy Hildreth, for introducing me to concepts and theories about decolonizing researh, and for being an anti-racist and inclusive educator, who looks at the whole student. I have learned much about race, ethnicity, gender, sexuality, and other categories that define someone's identity in today's society, and ultimately affect every aspect of their life.

I thank my family for supporting me through the past four years of academic and personal growth. Most notably my mom has proofread nearly everything I have ever written to check for spelling and grammar. My dad encouraged me to attend CU Boulder and follow my dreams, after visiting its campus. My family has believed in my academic abilities and writing skills even when I did not myself.

Finally, I thank everyone who has inspired me to pursue my passion for education and working with youth, including Adam Boardman, Anne Moses, and many others.

Abstract

In 2020, COVID-19 changed the lives of adolescent students across the country, as they transitioned to learning from home, some even from their beds. Many educators, psychologists, and sociologists have argued that virtual learning at the high school level has had more disadvantages than advantages, especially for minority students. There is most definitely evidence that agrees with those conclusions. However, this study highlights some of the benefits of online learning, and how it might improve the educational experience for adolescents of color, LGBTQ students and students with learning disabilities (minorities). After sources were reviewed, hypotheses were created to predict the results of interviews with first-year students at the University of Colorado Boulder (CU).

Participants were recruited through Greek Life meetings and online class sessions. After interviewing ten participants, who reflected on their past experiences learning online in high school, results included: 1. Patterns of both advantages and disadvantages to virtual learning for students of color; 2. More disadvantages to advantages of virtual learning for LGBTQ students; 3. More disadvantages to advantages of virtual learning for students with learning disabilities; 4. Students from every demographic reported both advantages and disadvantages to virtual learning at the high school level. I argue that while online education has its negative implications, it may benefit adolescent students more than the public perceives.

Table of Contents

Key Terms

Virtual learning: Taking courses that are traditionally taught in person, online and from home.

Special need student: An adolescent who struggles with physical conditions such as muscular dystrophy, multiple sclerosis, chronic asthma, epilepsy, etc., developmental conditions such as Down syndrome, autism, dyslexia, processing disorders, and behavioral conditions such as attention deficit disorder (ADD), attention-deficit/hyperactivity disorder (ADHD), bipolar, oppositional defiant disorder, etc. (PBWS 2021)

Zoom: A cloud-based video conferencing platform commonly used in virtual learning models.

Students of color: Anyone who is not considered white. In the United States, people of color include African Americans, Asian Americans, Native Americans, Pacific Islander Americans, multiracial Americans, and Latino Americans.

LGBTQ+: Term for those who do not identify as heterosexual and/or cisgender. Stands for Lesbian, Gay, Bisexual, Transgender, Queer, and Plus.

Positionality: The social and political context that creates your identity in terms of race, class, gender, sexuality, and ability status.

Introduction

In 2020, the COVID-19 pandemic forced schools to close, and students to learn from home on their computer, affecting every student in the United States and even worldwide. This thesis looks to answer the question: how has the transition to virtual learning affected adolescent development? Like all systems in the United States, the educational system favors people who are not minorities (heterosexual, cisgender, white, middle to upper class, no learning disability). In dismantling how schools oppress minority students, we must first identify the ways it happens. Has virtual learning harmed students throughout the pandemic? Or can virtual learning strategies allow oppressed students to excel in classrooms in the future?

I chose to research the adolescent age group because it has yet to be extensively researched by professionals. Traditionally, adolescents are between the ages of 10 to 19. My thesis will focus on high school students within this age group (14 to 18). I developed a study that would shed light on teenage challenges while learning online. Based on my observations of these students and my own experience, I began this thesis project with some preconceived notions about the disadvantages outweighing the advantages of virtual learning. Through my literature review and interviews, I acquired a new understanding of contactless education among high school students, and found advantages to virtual learning.

Throughout the literature review, I will not capitalize the word 'white' when I refer to someone's race but will capitalize the word 'Black,' because it represents "the shared experience of discrimination due solely to the color of one's skin" (Daniszewski 2020). The word Latinx will be used to describe students from Latin American backgrounds. I will also use the phrase "in-person" as an adjective to words like schooling and instruction, and "in person" as an adverb.

The language throughout this research thesis has been selected in hopes of decolonizing contemporary research and creating a culturally sensitive study. Colonization is a historical process that silences and exploits minority groups (by definition, Indigenous people) (Tuck & Yang 2012). Decolonizing research strives to be respectful of non-white participants and communities, avoids the interpretation of thoughts but uses original wording, and gives voice to students who are often silenced (Tuck & Yang 2012). This concept is relevant to my thesis, because I reviewed literature about minority groups and interviewed minority students.

Literature Review

This research project has sought to evaluate the impact of online education on adolescents of color, members of the LGBTQ community, students with learning disabilities, and others who are not part of the dominant group. I searched for articles in various news media outlets and in CU Boulder's online database, to find current events and peer-reviewed articles. Many of the articles I selected were studies reported in New York Times articles or the news, because the topic is so current and relevant. News articles and public sources allow this thesis to be culturally relevant and helpful in the progression of education.

When selecting literary sources, I considered these questions:
-   Do adolescent students of various socioeconomic statuses, races, sexual orientations and learning needs experience advantages while learning virtually?
-   If so, do these advantages outweigh the disadvantages of online education?

The below review of sources discuss the possible disadvantages and advantages of virtual learning for different groups of adolescent students. I found that the current literature and research on the experience of virtual learning for adolescent students is mostly descriptive, qualitative, and includes perspectives from students and families.

Virtual learning, online education, remote learning and other phrases will be used throughout the thesis to describe the experience of taking courses online. Virtual learning often involves students learning from their desk or in their beds at home, due to the spread of the COVID-19 virus in crowded spaces such as schools. Many high schools have started re-introducing in-person instruction, and allowing students to return to their school's campus, as mitigations like vaccines have suppressed the spread of the virus. However, this thesis argues that virtual learning methods may still be relevant after the pandemic calms, and schools reopen.

Disadvantages of Virtual Learning for all Adolescents

While popular media highlights virtual learning's negative effects on non-white students, academic studies on the subject suggest there are potentially clear benefits to high school courses being facilitated online even as schools return to in-person schooling. When learning remotely, adolescents of all identities spend many hours a day on their computers, straining their eyes and potentially contracting headaches and vision problems. Many are present on social media, adding more screen time to their day (Wu 2017). Students are mostly sedentary when learning through a computer screen, potentially hindering their development through adolescence (Wu 2017). Learners are unable to connect personally with their peers and teachers, potentially inhibiting their interaction skills in future professional or social settings. Adolescents have reported their challenges in taking academic assessments online because computer screens can be distracting

(Wu 2017). As predicted by many, online education can have disadvantages for students of all socioeconomic backgrounds, races, ethnicities, and gender identities. Downsides can include students spending extensive amounts of time staring at screens, as well as lacking body movements, social and interaction development, peer collaboration, student-teacher relationships, and opportunities for extra support (Wu 2017). Students have also struggled to self-discipline and motivate themselves to do independent, virtual education. As a result of virtual learning, many high schoolers have developed a fear of online assessment, and have struggled socially as they transition back to in-person instruction, (Dung 2020).

Disadvantages of Virtual Learning for Low-Income, Black or Latinx Students

There has been an abundance of recent research arguing the disadvantages of virtual learning in adolescent development, specifically for low-income students and students of color. Unfortunately, minority students do not always have adequate resources, including computers and internet access, to succeed in learning online from home (Goldstein (1) 2020). Low-income families often consist of two parents or single parents who work full-time jobs and cannot support their adolescents in adjusting to learning online. Many minority students rely on the technological resources and support from faculty to learn, and are disadvantaged by online learning. Student progress in math decreased by about half in classrooms located in low-income ZIP codes, by a third in classrooms in middle-income ZIP codes, and not at all in classrooms in high-income ZIP codes (Goldstein (2) 2020). In both articles (written by two different Goldsteins), there is a clear inequality in student success through virtual learning, because of a difference in access to resources and support.

Dorn (2021) affirms these concerns:

"Lower-income students are less likely to have access to high-quality remote learning or to a conducive learning environment, such as a quiet space with minimal distractions, devices they do not need to share, high-speed internet, and parental academic supervision… Only 60% of low-income students are regularly logging into online instruction; 90% of high-income students do. Engagement rates are also lagging behind in schools serving predominantly Black and Latinx students; just 60 to 70% are logging in regularly."

Dorn also predicts high school dropout rates will increase as a result of virtual learning, because "the virus is disrupting many of the supports that can help vulnerable kids stay in school: academic engagement and achievement, strong relationships with caring adults, and supportive home environments" (Dorn 2021). Evidently, virtual learning is especially harmful to academic engagement and social development for low-income adolescents and students of color.

Disadvantages of Virtual Learning for LGBTQ Students

When high schools closed in 2020 because of the pandemic, LGBTQ adolescent mental health was particularly affected, as they missed the sense of community that school provided them before the pandemic (Will 2022). In Will's study, LGBTQ students were interviewed, and one said, "School is kind of a place where my queerness is able to manifest itself," said Nic Oke, a participant in Will's research who has been learning remotely since last March (Will 2022). In-person schooling provides a safe environment for LGBTQ students to express themselves and feel support from other LGBTQ students. Oke later discussed that he is bisexual, and out to his mother, but not to the rest of his family. Many LGBTQ students who are not out to their families felt uncomfortable learning from home, where they had to hide parts of their identities.

Before the pandemic, LGBTQ youth experienced feelings of depression at greater rates than their heterosexual peers (Will 2022). According to Will's report on a study conducted by EdWeek Research Center, when high schoolers learned remotely from home, LGBTQ students felt too sad or down to focus on instruction. LGBTQ students are also more likely to say they are feeling physical symptoms of illness that stem from anxiety, such as stomach aches or headaches, during virtual class time (Will 2022). Many LGBTQ students felt so much anxiety while learning from home, they slept less than other students.

Relationships between LGBTQ students and their families while learning from home were hindered, as students were closed off and distant from their family members who did not know that they are LGBTQ (Will 2022). Many did not receive adequate mental health services while learning online, that they may have been given in person at school. Seeking help from counselors and family members is often uncomfortable for LGBTQ adolescents while learning online or in person, because they fear that people who are supposed to support them will try to change, convert, or judge them. Virtual learning also caused students to engage on social media more, where cyberbullying against LGBTQ students is now more common (Will 2022). Unfortunately, while many students were able to find safety and convenience while learning virtually from home, many LGBTQ students felt safer learning in person at school.

Disadvantages of Virtual Learning for Students with Learning Disabilities

Students with disabilities like attention-deficit/hyperactivity disorder (ADHD) and dyslexia struggled while learning online, without in-person support and the accommodations that they received in in-person school. Many with learning disabilities prefer kinesthetic-tactile or

hands-on learning activities that can arguably only be facilitated effectively when they are learning in physical classrooms. Online learning can also be overwhelming and distracting for students with learning disabilities, with multiple conversations happening between peers and teachers delivering information quickly. Student-teacher and student-student relationships were often minimized in virtual learning environments, most significantly affecting adolescent students with social and learning disabilities who need social interaction to develop (Shiah 1994).

Many students with learning disabilities need accommodations, such as extra time on exams (Shiah 1994). While modern computer software, like Zoom and Canvas, allow extended time accommodations, many do not, and, therefore, deprive students of that necessary option. When the participants in Hallahan's (2020) study were asked if recorded lectures and lessons were helpful, the students with and without learning disabilities found audio recordings of lessons and material unhelpful. Some participants with and without learning disabilities were not able to access the recordings because of technical difficulties; others were not disciplined or motivated enough to rewatch the lessons on their own time (Hallahan 2000). Students can work at their own pace while learning virtually, but those with disabilities did not get the support and motivation to stay on track, as many are challenged in focusing. Learning styles vary, and virtual learning often delivers information in uniform models, negatively impacting students with learning disabilities. While every student's experience with remote learning is subjective, students with disabilities endured more obstacles than their peers.

Advantages of Virtual Learning for Low-Income,
Black or Latinx Students

The most intriguing finding from past studies is that students of color often prefered learning from home because they felt unsafe in their schools (Balingit 2021) (Anderson 2020) (Laing 2010). Families of color have been most impacted in terms of health throughout the pandemic, as Black, Indigenous and Pacific Islander Americans have experienced double the high death rates of white and Asian Americans. Black and Latinx children and teenagers account for 74% of COVID-19 deaths in people under the age of 21 (Anderson 2020). Families, parents, and adolescent students often lack access to quality health care, health insurance, and/or linguistically and culturally responsive health care.

Many minority students, and 30% of Asian American students (Balingit 2021), live in intergenerational households with their grandparents or other elderly family members. Some families are distrustful of promised safety measures and are afraid that their children will face racist harassment at school, especially Asian Americans (Balingit 2021). They are concerned about being exposed to the virus and the harm it could cause to their older and immune-compromised family members. Minority adolescent students felt safer learning from home because attending in-person school induces the spread of COVID-19 and might, therefore, affect the health of themselves and their families.

Students of color and minority adolescent students also expressed their preference for learning from home because they were more protected from racism and harassment. Many students of color who learned from home were less exposed to the negative tropes and harassment that they experience at school (Anderson 2020). Online learning provided a safer environment for them. Students can still experience harassment while learning virtually and

attending classes over Zoom, as some white students wore derogatory clothing like "Make America Great Again" merchandise. But learners can adjust their settings to only view the teacher on their screen (Anderson 2020), preventing students from being exposed to harassment in online classrooms.

Harassment can occur in Zoom communication chats or over social media, but many adolescent students reported this experience being less upsetting than aggression they faced in person (Anderson 2020). As school districts across the country have reintroduced in-person learning and opened classrooms, national polling shows Black parents and students resisting their return, out of concern for their well-being and mental health. "89% saw returning to school as a large or moderate risk, compared with 64% of white parents" (Anderson 2020). An advantage of virtual learning for Black, Indigenous Americans, Latinx students, and other adolescents of color is their ability to avoid most of the polarizing racism and oppression they experience in in-person schooling.

According to Simoncelli's (2008) study, further discussed later in this review, students of color remained anonymous in discussion boards and had their voices heard without being bullied, harassed, or oppressed. Discussion boards, and other tools popularly used in virtual classrooms, allowed students of color to limit their exposure to microaggressions based on their race (Simoncelli 2008). Anonymity is valuable for adolescent students in education environments, especially oppressed students who felt more welcomed and respected in virtual learning models.

In the 2017-18 school year, 79% of teachers were white and lacked the experience and training necessary to teach students of all races equally in public high school education systems,(National Center for Education Statistics n.d.). When learning is facilitated in physical

classrooms, it is common for teachers to impose stereotypes and prejudices on minority students (Anderson 2020). However, virtual and independent learning, in some cases, made educators potentially unaware of their students' racial and cultural backgrounds and sexual orientations, "thereby eliminating some primary causes of the poor performance in schools", and stereotypes held by educators about minority students (Laing 2010). Virtual learning formats did not always conceal the identities of students, as large groups were often supervised at once. However, some independent learning models allowed students to learn from home at their own pace with recorded lectures, which protected students from racism imposed by their teachers; this reality influences what the future of education might look like.

Research has shown that computers can be utilized to reach students at risk of educational failure and aid them in not only becoming productive members of society but also graduating from schools (Laing 2010). Technologically competent and computer literate individuals stand a better chance of becoming productive citizens (Laing 2010). While providing technology and computer skills for adolescent students of color is not the only action that needs to be taken to close the achievement gap between white and Black students (further discussed in the section titled Conclusion), adolescents may benefit from a more technological experience.

Advantages of Virtual Learning for LGBTQ Students

A tool many teachers implemented to make LGBTQ students feel more comfortable and accepted in virtual classrooms is the use of Safe Space stickers or pride flags that students could see during instruction. LGBTQ teens enjoyed virtual learning because platforms like Zoom allowed students to change their video display names, so transgender students could be identified by a name different from the one they were assigned at birth (Will 2022). There was also a place

on Zoom where students can put their pronouns if they would like to. Teachers and students found this option in virtual learning environments helpful to introduce themselves by their pronouns to their peers (Will 2022). Breakout rooms, or small group meetings in Zoom classrooms, allowed students to choose peers to work with, allowing LGBTQ adolescents to connect. Many LGBTQ students, specifically transgender or students who identify as non-binary, appreciated their ability to go to the bathroom while learning from home, without being misgendered and policed by authority. Many LGBTQ students avoided bullying and harassment while learning remotely, similarly to students of color. Unfortunately, there is not much information in public literature or in research studies on the advantages of virtual learning for LGBTQ adolescent students.

Advantages of Virtual Learning for Students with Learning Disabilities

In researching the education system's relationship with students of color and students in the LGBTQ community, it is also important to understand how adolescent students with learning disabilities, such as dyslexia and ADHD, were affected by virtual learning. Existing research is inconclusive and has produced conflicting findings, as every student is impacted differently by virtual learning. A study conducted and analyzed by Andrew Simoncelli and Janice M. Hinson showed "no indication of helping out one group more than the other", and that students in the study tended to find the virtual learning options to be "either helpful or not helpful regardless of disability, age, or background" (Simoncelli & Hinson 2008). While the experience of virtual learning was subjective for every student with learning differences, and disadvantages of virtual

learning for those students were evident, recent research and literature may suggest that future education models should include virtual options to best accommodate disabled adolescents.

Strategies used in virtual classrooms, like discussion boards, have been proven to benefit students, especially those with disabilities. All of the student participants in Simoncelli's (2008) study, including those with learning disabilities, reported their enthusiasm for discussion boards, appreciating the features of collaboration, communication, and creative expression (Simoncelli & Hinson 2008). They were also able to read the discussion board's prompt slowly and thoroughly, take their time reflecting on their thoughts, and craft a response that reflected their best work. Therefore, as the education system progresses, tools like discussion boards and others discussed in Simoncelli's piece, might be helpful in creating learning options that benefit the majority of students. Virtual learning advantages students with learning disabilities in that it provides them opportunities for more time and privacy to focus.

An older report, conducted by Shiah in 1994, can still be considered relevant in that it discusses the advantages of learning online for students with learning disabilities, many of which are similar to those experienced throughout the pandemic. Modern softwares that allows students with disabilities to take exams from home with privacy are valuable and can help students avoid any judgment from their peers. Shiah explains the lack of accessibility some computer softwares had in the 1990s, so it is important for teachers to use updated teaching models and programs moving forward, to best accommodate all students.

Students with processing difficulties in the area of visual-motor integration, who are challenged in corresponding visual information and motor movement (Hallahan & Kauffman 2000), were benefited from taking exams online because they did not have to shift back and forth between an answer sheet and a test booklet or instruction sheet (Shiah 1994). As well, some

students with learning disabilities preferred the privacy of virtual learning, and avoided feelings of social anxiety and overstimulation (Hallahan 2000). Many felt more comfortable showing themselves when learning online, allowing peers to connect in meaningful ways.

Adolescent students with conditions such as ADHD found fewer distractions in their rooms at home than in a classroom setting (Gilman 2020). While some students found themselves stagnant while learning virtually and missed the energy of a school environment, many with disabilities enjoyed the ability to move around, fidget, eat a snack, and use other strategies to avoid anxiety while learning from home (Gilman 2020). Because Zoom courses were often taught with large groups of students with different skills and abilities, some with learning conditions valued taking courses with students who do not have learning conditions, to feel 'normal' and build community with peers they were separated from in the past (Gilman 2020). Traditional teaching models in classrooms seem to not effectively accommodate students with moderate to severe learning disabilities.

After evaluating the advantages and disadvantages of online education for students who are African American, Indigenous American, Asian American, members of other communities of color, and of the LGBTQ community, as well as those who need accommodations for learning disabilities at the high school level, it is clear that every student learns differently; there is no obvious future for the education system, nor for the best way to distribute knowledge to adolescents. However, a multitude of adolescent students of different demographics preferred virtual learning to traditional, in-person instruction. Many adolescent students of color and members of the LGBTQ community prefer learning online because they were able to keep their identities anonymous in some virtual environments, avoid harassment they experienced in physical classrooms, and take non-tracked courses (standardized courses not organized by

student skill levels) with the majority of peers to experience unified, standardized education. Many adolescent students with learning disabilities prefer learning online because they are able to avoid judgment from their peers regarding their condition, work in a less distracting environment, and connect with students who do not have learning disabilities. Online education evidently promoted more equality in high schools, and virtual teaching models should be considered as the education system continues to evolve and improve.

Gaps in the Literature

The pandemic has changed most aspects of life, but arguably, education most prominently. Therefore, scholarly literature on the advantages and disadvantages of virtual learning among adolescents is rapidly growing but remains inconclusive. To begin to remedy this situation, my study explores how different student groups perceive virtual learning and have adapted to it. Few other studies, to my knowledge, have asked students to reflect on their positionalities, privileges, and identities, in relation to those of other adolescent students. Asking students to reflect on their privileges helps determine whether virtual learning has advantaged or disadvantaged adolescent students because it speaks to sociological understandings as to how identities influence our experiences. The section about student reflection also represents the misconceptions and assumptions the public and media outlets have made about minority groups during virtual learning. My study not only aimed to understand the experiences of a diverse subject pool, but also to gain insights on their understanding of other students and their experiences.

Many existing studies have failed to focus on students who started learning online in the pandemic as adolescents, as high schoolers in 2020-2021. Most studies consider the experience

of students in higher education institutions, and young students in elementary schools. The adolescent period (ages 14-18) is especially important, and my study seeks to understand if students at different ages are able to learn online more successfully. Very few subjects in existing research are part of the LGBTQ community, and few studies have explored the impact of online education on adolescent mental health and social development. Few studies have understood the transition back to in-person instruction.

My study argues that online education is subjective to each student, in addition to identifying shared patterns in experiences. I also elaborate on the struggles and benefits students experience while learning online through high school, and further argue that the future of education may include opportunities for independent, online learning.

Research Questions

After reviewing scholarly sources and news articles, I developed hypotheses that I expected to see in my own research and to hear in the interviews that I conducted. They include the following:

1. Students of color and low-income students will mention both advantages and disadvantages that they experienced through virtual learning.

2. White, middle to upper-class students will report more advantages than disadvantages that they experienced through virtual learning.

3. Students with learning disabilities will report more disadvantages than advantages that they experienced through virtual learning.

4. LGBTQ students will report more disadvantages than advantages that they experienced throughout virtual learning.

5. There will be no prominent correlation between gender and experience throughout virtual learning.

6. White, upper-class, non-LGBTQ students without learning disabilities (non-minority students) will be least likely to reflect on the experiences of other students from minority groups.

7. Students from all demographics hope to avoid remote professional positions, because of their experience with virtual learning in high school.

The overarching research question for the project was: which students were most negatively and positively impacted by online education through the pandemic? Could online education models improve the academic experience for students moving forward?

Methodology

I came to this research from my own passion for education and its system's sociological implications for students. At the University of Colorado Boulder (CU), I have studied Leadership and Community Engagement (a subprogram in CU's School of Education) for four years, and Sociology for two. During this time, I have become increasingly more interested in engaging with youth and teaching in a way that best accommodates all students. Throughout the past decade, and most significantly since the start of the COVID-19 pandemic, students have transitioned to learning on their computers in their homes. This phenomenon has inspired me to explore the impact of virtual learning on adolescents.

As a college student, I experienced virtual learning in higher education and witnessed the struggles of young adults. While students have experienced obstacles, due to a lack of

engagement in Zoom classrooms and an inability to interact with peers and teachers, they have also enjoyed a more flexible schedule, the ability to learn while traveling, and improvements in virtual communication and collaboration skills (Govindarajan 2020).

During the summer of 2021, I led a creative writing workshop over Zoom, through an organization called 826 Valencia, founded by author Dave Eggers and veteran teacher Nínive Calegari in San Francisco. Observations from that internship were not used as data in this study but influenced my perspective on virtual learning and its effects on student development and creativity. The students who participated in the 826 summer camp, whose ages ranged from 6 to 6, struggled to maintain attention while learning online and felt unmotivated to finish projects. This observation made me wonder how older age groups might be struggling with virtual learning.

To fill gaps in the literature listed previously, I focused on the adolescent age group, and created research and interview questions that strived to answer who is most benefited by virtual learning. I asked my participants about their mental health, and their ability to make social connections during the pandemic as they pursue in-person instruction and interactions on a college campus. I also included questions about the transition back to in-person instruction on a large college campus such as CU. While this thesis strives to fill gaps in existing research, there is still room for future research to further explore virtual learning at the adolescent phase.

To understand the adolescent experience through virtual learning, a qualitative research study was conducted, rather than quantitative, because I was able to listen to the elaborate experiences of students and observe the attitudes or emotions that they felt in regards to education. I interviewed ten students, who are currently first-year students at CU Boulder, therefore 18 to 19 years old. To recruit first-year students, I made announcements at meetings of

Greek organizations and at 1000 level courses that were mostly first-year students. Only ten

students were able to participate because of the lack of time for recruitment and the busy

schedules of students, who were still managing the return to in-person classes, as well as

continued hybrid and Zoom courses. Because the subject pool is small, this thesis provides

perspectives on some first-year students, but does not generalize the whole population of

first-year students at CU Boulder.

After they signed consent forms, the students were interviewed and asked about their

previous experiences with virtual learning during high school. Interviews were conducted over

Zoom, recorded, and automatically transcribed using Zoom software. Zoom meetings were

conducted in safe, private spaces so that answers were not heard from anyone outside of this

study. Recordings and transcriptions were filed in a Google Drive folder that only I am able to

access. Student names were coded using pseudonyms, or traditional names that differ from the

participant's. After the data and findings of this study are reported, the document that links

student names to codes, transcriptions, Zoom meeting recordings, and other notes from this study

will be destroyed and not accessed again.

The interviews being conducted on Zoom brings negative and positive implications to

this study. Virtual interviews have become popular since the pandemic and include advantages,

such as overcoming geographical locations and faster recruitment times. Another advantage of

using Zoom is the accurate and quick transcription process the software has, that saved me time

when managing my interview data. Conducting interviews virtually can be harmful, however, in

that it assumes all participants have access to technology, and excludes potential participants who

do not have access to Zoom or computers. Technical difficulty can occur during interviews over

Zoom, but "also have the unintended benefit of increasing bonds between the researcher and

participant as they work together to resolve the technical issue" (Roberts 2021). Another limitation of virtual interviews is that students are less likely to be vulnerable and connect with the interviewer; I experienced this in my own interviews. It is important to understand the advantages and disadvantages of online interviews to analyze the results of this study, and I wonder how students may have responded differently to questions if they were asked in person.

After students were reminded that they were able to refrain from answering any question or stop the interview at any time, all participants were asked the questions listed in Appendix A of this thesis, with little probing or additional questions. I organized findings by hypothesis, using data from each participant where evidence is needed. The following table describes the participants of this study, based on how they self-defined themselves.

Table A. Participant Demographics

Subject	Race	Sexuality	Gender	Learning Difference	Socioeconomic status
Chris	White	Heterosexual	Male	None	Middle-Class
Stacey	White and Asian American	Heterosexual	Female	ADHD	Upper-Class
Carly	White	Heterosexual	Female	None	Middle-Class
Bella	White	Heterosexual	Female	None	Working Class
Louise	White	Heterosexual	Female	None	Middle-Class
Kate	White and Latina	Heterosexual	Female	None	Upper-Class
Lydia	White	Queer	Non-binary	None	Working Class
Joseph	White and Native Hawaiian	Heterosexual	Male	None	Middle-Class

Paige	White	Queer	Female	None	Middle-Class
Arlo	African American (Black)	Heterosexual	Male	None	Working Class
Tatum	White	Heterosexual	Female	Dyslexia	Upper-Class

Hypothesis 1:
Students of color will mention both advantages and disadvantages that they experienced through virtual learning

After reviewing sources that concerned students of color, I predicted that they would report both advantages and disadvantages of virtual learning and was curious to hear if there was more of one than the other. Kate, a Latina female, "would keep her camera off and take naps in her bed while attending Zoom classes." She lacked self-motivation and interest in the topics that her teachers were teaching. There was no "self-interest" in getting up and attending Zoom classes in a meaningful way. Kate admits that many of the "bad habits " that she learned while learning virtually throughout the pandemic were brought to college with her, and she now sleeps through many of her online classes with her camera off. Kate's academic success was not negatively affected by virtual learning, but "definitely did not improve."

There were minimal relationships between students of color and teachers, because remote learning did not allow extensive communication. Kate "admired the teachers that made an effort to connect with her, check in with her, and ask if she needed extra support." Many students of color now have expectations of the education system, as a result of online learning: teachers should value their students and foster relationships. Transitioning back to in-person instruction has been difficult for many students of color, especially for Kate, who feels her lack of

socialization during online learning negatively impacted her social skills. We see that students of color and other minorities missed their communities while learning from home; these emotions impacted their social networks, as well as their mental health.

It was difficult for students of color like Arlo, an African American male, to find a quiet space in his home to learn. Arlo's academic performance was impacted negatively through learning online, as learning from home "takes a lot more discipline." It was challenging to self-discipline without face-to-face motivation from peers and teachers. His mental health was also negatively impacted while learning online. As a minority student, it was important for Arlo to maintain relationships with other students of color and his friends in his community. His work was majority independent, and he found that he was "left behind" by teachers and that his concerns were not addressed enough. Learning online made him more "introverted," and he now struggles to advocate for himself in academic environments on CU's campus.

However, one participant of color had a positive experience with virtual learning, as Joseph's, a native Hawaiian male, grades improved, because he was "able to rewatch lecture recordings, stop and start them so he could take adequate notes, and use notes during assessments." He enjoyed the "non-traditional, more flexible, less strict" features of remote learning. Joseph's mental health improved through learning online, as school was "less of a time commitment" for him, and he was able to exercise and be active outdoors. Joseph did not mind the independence of remote learning, though he was unable to "advocate for himself" when he needed extra assistance from teachers or wanted to collaborate with peers. His expectation of the education system after learning online is to "prioritize communication and to use diverse ways to deliver information." Virtual learning gave him time to research job opportunities that might fit his interests down the road, and he appreciated the ability to participate in things that were not

school-related. Joseph has valued returning to in-person instruction on CU Boulder's campus, as his classes are more engaging and stimulating. My hypothesis that students of color experienced both advantages and disadvantages during virtual learning was accurate.

Hypothesis 2:
White, middle to upper-class students will report more advantages than disadvantages that they experienced through virtual learning

While many white students expressed frustrations with virtual learning, my hypothesis that they would report more advantages than minority students was mostly accurate. Chris, a Caucasian, middle-class, straight, male, is now a member of Greek Life on CU's campus. He has no known learning disabilities, took virtual courses for all of his junior and senior years of high school, and reported that neither his grades nor his mental health was impacted severely. Chris had "no trouble creating a social network" on CU Boulder's campus, despite learning from home and not interacting with peers at the end of his high school career.

Stacey, an upper-class student, was able to work in her family's beach house while learning remotely. She is an only child, and was able to find a quiet working environment at home that allowed her grades and academic performance to improve. Bella's, a white, straight female, grades improved as well because her "teachers allowed the use of notes during exams", were more "flexible about deadlines", and courses were administered in a "self-paced format", allowing Bella to create her own schedule. Louise, a white female, found the "Pass/Fail option helpful" while learning online, which is the ability to receive a pass or fail credit for her courses instead of a letter grade on her transcript. Carly, a white, upper-class female with no learning disabilities, was able to find a quiet working environment at home while learning online because her four older siblings no longer lived at home. Her parents were comfortable with her friends

27

and peers coming over to work on academic lessons together, in an "effort to maintain social connections." During the spread of COVID-19, it was rare for families to allow visitors in the house. Carly's privilege of socialization during that time may have related to her race and socio-economic status, as many minority students and multigenerational households avoided human contact, because they have been more vulnerable to the virus. She was also able to "develop stronger relationships with her parents" during this time. Parents who worked from home enjoyed supporting their high schoolers through academic work and being part of their learning journey more than they had been in the past. Many minority students did not have the privilege of support and bonding with their parents during remote learning.

Disadvantages of virtual learning that non-minority students mentioned included the struggle to focus in class meetings with distractions on laptops, cell phones, and communication between family members. Chris's teachers facilitated collaborative learning opportunities, but students "checked out" and "lacked the urgency to participate in a meaningful way." He now has new expectations for teachers and professors, and "needs them to be patient but also consistent in their delivery of knowledge, whether in person or online." Carly now expects teachers and professors at CU Boulder to "make time to answer questions in in-person or online classes," and communicate with their students frequently.

Many white, middle to upper-class participants, including Carly, found it "difficult to communicate with her teachers and receive additional assistance" in lessons and to understand concepts, so her parents were able to provide supplemental help. Her parents worked from home, an option many parents in minority groups did not have. Another struggle felt by some students was the feeling of stress while learning online, especially during tests and assessments. Feelings of loneliness and anxiety were also common among non-minority participants. "It was

depressing," said Louise, to be home all the time, and to have a stagnant lifestyle with little social interaction. Louise did not feel as engaged with her school because she was "not in a stimulating environment, where peers and teachers kept her motivated." Teachers no longer pushed their students to challenge themselves academically. Because the world was in such an "unknown state," classwork remained in the "comfort zone," Louise said. Bella felt her connections with peers weakened because teachers discouraged collaborative, virtual work. Teachers began "not trusting students and accusing them of cheating when they collaborated on assignments or study guides." Bella suggested that "students needed to find support somehow, as communication with teachers was so limited." Carly was unable to ask questions during the exams to clarify questions and felt more anxious about her academics and personal life while learning online. It is apparent that non-minority students did experience obstacles while learning remotely through the pandemic, but were impacted positively more consistently than other groups.

Hypothesis 3:
Students with learning disabilities will report more disadvantages than advantages that they experienced through virtual learning

Stacey, a straight Asian American (half Korean and half white), and Jewish female has a mild form of ADHD that does not affect her learning drastically, but she is able to receive extra time on exams. She "missed making connections with her peers and teachers," as it was difficult to communicate over Zoom or through email. Her mental health struggled in this period, as she felt "lonely and isolated."

According to Bella, who worked as a peer mentor with special needs adolescent students in two after-school programs, it was difficult for special needs students to socialize. In this thesis, a special needs student is defined in the section titled Key Words. During her volunteer work, Bella noticed that the "most prominent struggle for special needs students while learning online was the change in routine, lack of consistency, and inability to access hands-on instructional tools like whiteboards and microphones." Many of the special needs students whom Bella worked with found it challenging to understand instructions without them being written out and also felt isolated. Many special needs students are not active on social media platforms, making it difficult for them to maintain their friendships and community. While I was unable to interview a special needs person directly, Bella's experience working with many in an after-school program provided valuable insight into the disadvantages students with mild to severe learning disabilities experienced while learning online. Future studies might research more extensively the effects of online learning on special needs students.

Tatum, a white female who suffers from severe dyslexia, a learning difference that affects a student's reading and writing, found it difficult to find "a space to concentrate on academic work," with her parents and siblings working from home as well. Reading on a computer screen for extended periods made her head hurt, and she felt wearier after a school day. She found herself procrastinating on assignments, not studying as hard as she used to when she attended in-person classes and found it difficult to motivate herself without teachers and peers supporting her. Tatum's grades remained around the same as she transitioned to online education, but she feels she "could have performed better if classes were in person." Before the pandemic and the closure of her high school, she was becoming "more confident in the classroom as she found strategies to read" and learn despite her dyslexia. She was able to communicate with her teachers

about her accommodations and how she can best be supported. Once she started learning online, those "strategies became irrelevant," and she had to find new ways to adjust. She feels that that period of online learning "stunted her growth" as a student with dyslexia.

Tatum's mental health was affected negatively, in that she felt isolated from her peers, the faculty that supported her through accommodations for her learning difference, and younger students outside of her courses. Her social life did not grow and thrive, because she was unable to meet new people outside of her Zoom classrooms. "Collaborating with peers in group projects or assignments was ineffective," as communicating through online platforms takes longer than working on things face to face.

Hypothesis 4:
LGBTQ students will report more disadvantages than advantages that they experienced throughout virtual learning

Lydia, a queer, non-binary student took all of their classes from home, where it was difficult to find a successful learning environment, as their siblings were transitioning to online education as well. Their parents were working from home, causing the internet access to be limited and difficult to equally distribute. They found it hard to differentiate between home / personal life and school / academic life, as everything was done in their room. Other struggles included: their courses seemed to lack structure, they lacked adequate guidance from their teachers, and they lost collaborative connections with their peers. There was "nothing keeping people together," just a ton of factors "keeping people apart."

According to Lydia, many members of the LGBTQ community rely on their community and friends for support against systems of injustice. While learning online, they were unable to

attend school and connect with people who understand them and their sexuality. Lack of socialization can cause depression and anxiety. Many LGBTQ students at the adolescent age "are not out to their parents and families yet," making being at home all day every day uncomfortable, and "emotionally taxing." They elaborated on the ability for unfiltered student dialogue in virtual learning, negatively impacting the LGBTQ community. We saw patterns of harassment in the literature review, as some students experience cyberbullying in Zoom classrooms or other settings of virtual learning.

Paige, a queer female, felt depressed and lonely more often while learning online because she was unable to connect with dance partners at her performing arts high school, and friends from the LGBTQ community. Being a queer adolescent, it was difficult for her to not be around the people who understood her. My hypothesis that LGBTQ students have struggled with virtual learning more than they benefited from it was accurate, as they missed community and their mental health was negatively impacted.

Hypothesis 5:
There will be no prominent correlation between gender and experience throughout virtual learning

There was no significant data that alluded to a difference in experience between young men and women during virtual learning. A non-binary participant's data is discussed in the section titled Hypothesis 4. This lack of data does not mean that there is definitely not a correlation between the experience of virtual learning and student gender. The literature I reviewed did not conclude the correlation either, so future research studies might tackle this

question. For now, we can assume that non-LGBTQ students who identify as male or female

experienced similar patterns while learning remotely in high school.

Hypothesis 6:
White, upper-class, non-LGBTQ students without learning disabilities (non-minority students) will be least likely to reflect on the experiences of other students from minority groups

When researching this topic, I noticed that media outlets and researchers have made

assumptions about the experiences of students whom they may not identify with. This segment

of my thesis was intended to understand how students saw or assumed other students

experienced virtual learning. I wanted to gain an understanding of the public's opinion of the

experience for minority students learning from home. I asked my participants if they were able to

reflect on the ways their identities allowed them to be positively or negatively impacted by

virtual learning, as well as how their experience compared to those of others.

When I asked if Stacey, a white participant, could provide insights on students of other

demographics, she mentioned that in her private school's community, there was a culture of

competition surrounding finance. Virtual learning made the competitive system in her

upper-class high school even more difficult, as "it was clear which students had more resources

than others." While the majority of the students who attended her high school were upper-class,

the students who did not have adequate technology or WiFi "fell behind, while teachers assumed

every student had what they needed to learn remotely." She felt uncomfortable during those

dialogues, most likely because of her upper-class socioeconomic status. Literature has shown

evidence that non-minority students are less negatively impacted by learning online than

minority students. Many non-minority students throughout this section of the interviews were not

inspired to reflect on the experiences of others from different demographics, perhaps because they had not been around minority students who struggled.

However, Louise, a white, upper-class female, was very aware that students from low-income schools and communities in San Francisco did not have the resources that she and her peers had to succeed in virtual learning and sees that online education "benefits" some students more than others. While it was not common, some non-minority students were reflective on the privileges that they had during virtual learning and the struggles minority students faced.

Kate, a Latina female, was asked if she could provide insight on the experience of students from low socioeconomic backgrounds learning online, and mentioned the lack of accessibility to computers and Wi-Fi. She also said that "during that time, everyone was so focused on their own situation and succeeding in school the best way that they could, rather than feeling empathy for others." She seemed to be reflecting not on her own personal experiences, but rather those of her community, or other students of color. There is a pattern of students of color knowing about the struggles of other students of color, because they witnessed the tribulations other minority communities face, and felt empathy. I wanted to show the separation between minority and non-minority students in this thesis, and show that minority students are often more aware of adversity and negative impacts than those who experience privileges.

Arlo, an African American male, mentioned that he was aware that his race and socioeconomic status prevented him from excelling in virtual learning. He said, "My demographic somewhat negatively impacted my experience while learning online." While learning online through the pandemic, he felt other students were "supported more adequately," and was never sure why. He felt that students of color were generally "left behind" during the period of virtual learning. Arlo was able to reflect on this topic slightly, but maybe felt

uncomfortable in sharing his concerns, as adolescent perspectives, especially those of color, have been overlooked and dismissed throughout the introduction of virtual learning in the pandemic.

Paige concluded the interview by talking about her socioeconomic status and the resources that she had which allowed her to be successful while learning online. Her parents were able to work from home and had flexible schedules, and her "mom supported her" in the transition to remote learning. Her older siblings lived on their college campuses, so she was able to find a quiet work environment. Her Wi-Fi worked consistently, and she faced fewer obstacles during this period than other adolescents. She mentioned that many of her "friends had to assist their younger siblings with remote learning while navigating it themselves." Some of her "friends contributed to their families' financial income and worked jobs while adjusting to remote learning." Paige was very open and reflective about her identity compared to other interviewees. She struggled with learning from home as a queer student, and related to the struggles of social isolation felt by other minority students groups. Students who were not as negatively impacted by virtual learning may not be aware of how their identities affected their experiences.

Tatum, a student who suffers from a learning disability, replied that her "ability to access technology and resources allowed her to be successful" when she was asked about the relationship between demographics and her success when learning online in high school. Her learning difference made learning online a challenge, but "other students faced greater challenges and did not have the resources to overcome them." She was very conscious of her privileges in learning online. There was a pattern that non-minority students (white, straight, upper-class) were less aware of their social position and privileges in virtual learning, while minority students were quick to reflect on their identities and those of others. Therefore, my hypothesis was mostly

accurate, with a few white participants being knowledgeable about the disadvantages students of other demographics have faced.

Hypothesis 7:
Remote professional positions, and expectations of higher education influenced by virtual learning in high school

The literature that I reviewed lacked data on how high school students were influenced by virtual learning to avoid or pursue remote internships in college or professional positions after college. I was also interested in interviewing students on their expectations of higher education institutions, after learning online throughout high school. Some students developed a new sense of respect for teachers, who struggled with navigating to virtual learning, including Arlo. Others were frustrated by their teachers' lack of communication, and now expect excessive communication for professors on CU's campus, including Stacey, Carly, Joseph, and Paige. Many students have also expected mental health services at CU, as they felt their high school fell short in supporting students, including Bella.

The majority of students interviewed, including Chris, Carly and Paige hope to pursue in-person professional positions in the future because they feel they will be more motivated and develop better connections if they don't work remotely. Students who had no interest in pursuing remote or virtual jobs prefer working collaboratively with others in person. However, while Arlo was challenged when learning online in high school, he is now inspired to pursue remote professional positions, so he can work from any place. He reflected on his childhood with parents who worked hard to provide him with the opportunities that he has today. Virtual learning in high school has inspired him to pursue remote positions in his future, so he "can be

attentive and present with his family." We see Arlo as evidence of a student of color who experienced both disadvantages and advantages during virtual schooling, but their latter may outweigh their former.

Other students were inspired by remote learning as well, as Louise "hopes to be a therapist, and understands the world's transition to virtual life may benefit her career." Students like Bella, Tatum, and Kate are open to hybrid positions or do not have a preference. While first-year students are years from starting their professional careers, it is important to understand how virtual learning in high school influences students' career aspirations and goals, to determine if the advantages of online education outweigh the disadvantages.

New expectations of the education system were apparent in my interviews as well. While applying for colleges, Carly, along with other white students, prioritized mental health services on campuses, as a result of her experience learning virtually through high school. Chris prioritized schools that were "actively trying to create a safe environment for students to learn in person." Paige now expects teachers and faculty to support students not just academically, but also emotionally, and looked for a feeling of support when visiting colleges as an applicant. Learning online through high school influenced her to apply to colleges that "encourage students to cultivate meaningful relationships with peers and professors." Online education influenced the futures of students who learned virtually towards the end of their high school more than many have presumed, as colleges were selected by students who hoped for support, and many hope to not work from home in their careers.

Data Analysis

To analyze the data, I read the interview transcripts and highlighted words that corresponded with broad themes. The following were decided upon after the interviews were completed. I also highlighted aspects of the participants' identities, to find patterns between students' race, gender, sexuality, socio-economic status etc, and their experience with virtual learning.

Table B. Themes and Frequency

Theme	Number of times it appeared
Mental health not affected	2
Mental health negatively affected	4
Lack of peer and teacher collaboration	7
Expectations of higher education system impacted	9
Future career aspirations were impacted	4
Academic performance was not impacted	3
Academic performance improved	1
Academic performance negatively impacted	1
Struggles of isolation	4

Results

This study strived to capture perspectives from a variety of first-year students at CU Boulder. An overwhelming majority of the ten students whom I interviewed had negative experiences with virtual learning throughout their high school years. Students from every demographic found working from home distracting, missed meaningful connections with peers

and teachers, needed more academic and mental health support, and felt unmotivated to complete assignments and assessments independently.

Upper-class, white, heterosexual, adolescent students seemed to succeed most while learning remotely, because they had space to focus on school in their home, the right resources and materials, a social network that was not drastically impacted by learning online, and adequate support from teachers. LGBTQ students, unfortunately, experienced depression and isolation during virtual learning more severely than non-LGBTQ students. Students of color were more negatively impacted by online education than white students, as many did not have adequate resources and lacked support from teachers. Students with learning disabilities were disadvantaged as well, because of how distracting and engaging online learning can be.

While my interviews were filled with negative feedback for online education, I was able to discover some advantages. Some students had more time to pursue passions and activities of interest because school was not as big of a time commitment. Mental health among adolescents often improves when they are able to engage in opportunities that are not school-related. Some students benefited from the options to use notes in assessments and rewatch lecture recordings to fully understand material. Grades improved for some students because education was more forgiving and students were able to use resources during exams. Some reported that they were able to spend more time with their families.

I enjoyed asking students about their thoughts on their demographics and the demographics of other students, because they may have never considered the experiences of others. Some white students were able to provide insight on their experiences in contrast to the experience of minority students. Every minority student interviewed was able to provide insight

on their experiences, in addition to an insight about another social group. Students who experienced disadvantages were more likely to reflect on them and those of other students.

The interviews that I conducted and my literature review produced many similar insights, but a majority of contradictory information. Popular media has often portrayed virtual learning as a horrible experience for all students throughout the pandemic, especially for those of color. This perspective is valid, as many of the students I interviewed reported their negative experiences with virtual learning. But as I further researched, I found studies about the positive impacts of virtual learning. The discrepancy between the literature review's evidence and my own study's results could be explained by a number of reasons. Most likely, scholarly sources and professional studies use much larger sample sizes than mine, allowing for more diversity in perspectives. Phrasing in my interview questions may have differed from those of interviews in professional studies that I evaluated in my literature review, subconsciously persuading students to answer in specific ways. I wanted to highlight the differences between the public literature on virtual learning and the results from my own study to further prove the subjectivity of education and the adolescent experience.

I chose to do a qualitative study for this research project and to interview ten freshmen at CU Boulder, because I wanted students to feel heard. Every student experienced advantages and disadvantages while learning online, in mental health, their social skills, academic abilities, relationships with their families, and other areas of concern. Every student deserves to be listened to, and I feel most have not been asked about their learning experiences in the past few years. Ageism, or the discrimination of youth because of their age, is common in the education system, as many decisions are made without student involvement. Student perspectives are often dismissed because of their age. Throughout the pandemic, adolescent high school students have

been overlooked and generalized in many ways, and I wanted to capture the variety of experiences with virtual learning. The study was successful in that it contributed to the research about online education, and challenged the popular belief that it disadvantages all students.

Limitations

Because this was my first effort in developing a research study to this extent, in an eight month period, my study is not perfect. I experienced obstacles throughout the process, including lack of participants who were able to find time for an interview, and the process took many weeks to be approved by the Institutional Review Board. Time was a limitation for this study. I strived to understand the perspectives of as many races, genders, sexual orientations and demographics that I could, but it may have been more affective if I interviewed ten students of the same race, gender, or sexual orientation. That would have allowed the study to be more focused and elaborate on one demographic group. My subject pool was also flawed, as many of them were part of Greek Life, because of my own affiliation with a sorority. Many students were white, straight and middle-class, because CU's population is mostly that demographic, especially the Greek community. Perhaps more ways to recruit participants could have been implemented. I might have had a larger, more diverse subject pool if I recruited participants from other universities.

Because of COVID-19, interviews had to be conducted over Zoom, which created a few limitations in itself. Establishing a relationship of trust and respect between myself and the interviewees was difficult, as we were speaking through a computer screen. Perhaps students would have opened up and elaborated more on thoughts if I had conducted in-person interviews, and was able to connect with the students in a more meaningful way.

I strived to develop interview questions that lacked bias, but found skewed results. Perhaps the wording of some questions could be edited to better produce authentic responses. I also could have created more questions on personal identities and demographics, to further understand a student's positionality in online learning. I might have added these questions: how were you treated differently by teachers while learning online, compared to in a classroom previously? Did you experience bullying or harassment before or while learning virtually? Ultimately, if I were to continue this research study, I would interview Latinx students, students whose parents are undocumented, and students whose first language is not English. Existing studies and literature lack insights into perspectives from those demographics, and it would be interesting to hear their thoughts. I missed a lot of demographics in this study, as it was impossible to interview a student from every community represented on CU Boulder's campus.

Conclusion

As the education system continues to evolve and progress, we cannot help but question if remote learning options will continue to be implemented, and if online education benefits the greater number of adolescent students at the high school level. While online education, and the educational experience in general, is subjective, and differs from student to student, this study provides evidence that virtual learning might advantage more students than the media portrays, and the general public believes. It is important for sociologists to remember that in today's society, someone's gender, race, ethnicity, sexuality, socioeconomic status, and other aspects of their identity impact every part of their life, even their high school experience. Evaluating these implications and oppressive systems in the education system is the first step in dismantling them.

I will now propose how virtual learning could be implemented in the future at the high school level, to benefit minority students who have been oppressed and have faced inequities with in-person instruction for decades. Earlier, I discussed how students of color are disadvantaged in the education system, and I will introduce another example of inequality.

As previously discussed, racism takes the form of bullying between peers, but is also prevalent in teaching strategies and policies commonly found in high schools, one being academic tracking. Tracking is used to designate students into separate educational paths and sections based on their academic performance. While supporters believe academic tracking allows students to learn at their own levels (Hanushek 2005), and challenge standardized curriculum for students with various academic needs (Strauss 2021), it has been found to perpetuate class inequality and disadvantage adolescent students of color and minorities (Hanushek 2005). Academic tracking systems are often blamed for the achievement gap in the U.S. educational system (the lower rates of test scores and academic performances Black and Latinx students have compared to white and Asian students on one side) (Hanushek 2005) (Ansell 2020). These teaching models contribute to racial oppression in the education system for a number of reasons, including qualified students of color are denied access to high level courses (Kohli 2014), low-level courses lack racial diversity, low-level courses often use outdated and unengaging curriculum and are taught by less-experienced teachers who implement stricter disciplinary strategies, and students in low-level courses are often perceived as more problematic and poorly behaved (Mathis 2013).

I wanted to bring up tracking and its harm on students of color, to show how virtual learning can dismantle this discrimination. Yes, if students were placed in low-level courses while learning in person, they might be placed in low-level courses online while learning

remotely. But if virtual learning and teaching environments were able to facilitate teaching for larger classes, students of all skills, needs and demographics could be taught at the same level. Students could all be given the same assignments and assessments to be worked on individually and at their own pace. Providing uniform, standardized teaching in a remote format for adolescent students may promote equality in the education system, and contribute to the closing of the achievement gap between races in the United States. There is evidence in this thesis and in other published research studies that argues the future of adolescent education, may include virtual options, to advantages minorities.

If I were to continue this study to elaborate on the experiences of adolescents while learning online, I would interview more diverse people and read literature about students from communities and demographics I have not yet researched. I would recruit students from immigrant, undocumented families, students whose first language is not English, Indigenous American students, transgender students, and other vulnerable groups. I would generate a subject pool that attempts to represent students from every background. I would also try to conduct interviews in person to encourage students to open up more than they did over Zoom, and elaborate on thoughts. I would recruit freshmen from other universities to generate a larger subject pool. I have enjoyed the process of this research study tremendously, as I have developed my interviewing, critical thinking, literature reviewing and writing skills that will allow me to succeed as I pursue professional positions in the future. I hope to implement virtual teaching methods in future teaching roles that I am in, that will promote equality and contribute to the social development of adolescent students.

References

Anderson, T. C. (2020). Academics, Achievement Gap, and Nutritional Health: The Impact of Coronavirus on Education. Delta Kappa Gamma Bulletin, 87(1), 14–17.

Ansell, S. E. (2020, December 14). Achievement gap. Education Week. Retrieved January 31, 2022, from https://www.edweek.org/leadership/achievement-gap/2004/09

Balingit, M., Natanson, H., & Chen, Y. (2021, March 11). As schools reopen, Asian American students are missing from classrooms. The Washington Post. Retrieved January 27, 2022, from https://www.washingtonpost.com/education/asian-american-students-home-school-in-person-pandemic/2021/03/02/eb7056bc-7786-11eb-8115-9ad5e9c02117_story.html

Daniszewski, J. (2020, July 20). Why we will lowercase white. AP Definitive Source. Retrieved February 22, 2022, from https://blog.ap.org/announcements/why-we-will-lowercase-white

Doan Thi Hue Dung. "The Advantages and Disadvantages of Virtual Learning." IOSR Journal of Research & Method in Education (IOSR-JRME), 10(3), (2020): pp. 45-48.

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2021, November 11). Covid-19 and student learning in the United States: The hurt could last A lifetime. McKinsey & Company. Retrieved January 31, 2022, from https://www.mckinsey.com/industries/education/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime

Gilman, A. (2020, October 5). Remote Learning has been a disaster for many students. but some kids have thrived. The Hechinger Report. Retrieved January 27, 2022, from https://hechingerreport.org/remote-learning-has-been-a-disaster-for-many-students-but-some-kids-have-thrived/

Goldstein, D. (1) (2020, May 9). The class divide: Remote learning at 2 schools, private and public. The New York Times. Retrieved January 31, 2022, from https://www.nytimes.com/2020/05/09/us/coronavirus-public-private-school.html

Goldstein, D. (2) (2020, June 5). Research shows students falling months behind during virus disruptions. The New York Times. Retrieved January 31, 2022, from https://www.nytimes.com/2020/06/05/us/coronavirus-education-lost-learning.html

Govindarajan, V., & Srivastava, A. (2020). What the shift to virtual learning could mean for the future of higher ed. Harvard Business Review, 31(1), 3-8.

Hallahan, D.P., & Kauffman, J.M. (2000). Exceptional learners: Introduction to special education. (8th ed.). Boston: Allyn and Bacon.

Hanushek, E., & Woessmann, L. (2005). Does educational tracking affect performance and inequality? differences-in-differences evidence across countries. The Economic Journal. https://doi.org/10.3386/w11124

Kohli, S. (2014, November 21). Modern-day segregation in public schools. The Atlantic. Retrieved January 27, 2022, from https://www.theatlantic.com/education/archive/2014/11/modern-day-segregation-in-public-schools/382846/

Laing, T. (2010). Virtual learning: A solution to the all-black male school debate and the challenge of black male K-12 outcomes. Journal of African American Males in Education (JAAME), 1(3), 212-230

Mathis, W. (2013). Research-Based Options for Education Policymaking: Moving Beyond Tracking. University of Colorado Boulder. Retrieved January 27, 2022, from https://nepc.colorado.edu/sites/default/files/pb-options-10-tracking.pdf

Race and Ethnicity of Public School Teachers and Their Students. National Center for Education Statistics. (n.d.). Retrieved January 27, 2022, from https://nces.ed.gov/pubs2020/2020103/index.asp

Roberts, J. K., Pavlakis, A. E., & Richards, M. P. (2021). It's More Complicated Than It Seems: Virtual Qualitative Research in the COVID-19 Era. International Journal of Qualitative Methods. https://doi.org/10.1177/16094069211002959

Rosen, J. (2016, March 30). Teacher expectations reflect racial biases, Johns Hopkins study suggests. The Hub. Retrieved January 27, 2022, from https://hub.jhu.edu/2016/03/30/racial-bias-teacher-expectations-black-white/

Schwartz, Heather L., Melissa Kay Diliberti, and David Grant, Will Students Come Back? School Hesitancy Among Parents and Their Preferences for COVID-19 Safety Practices in Schools. Santa Monica, CA: RAND Corporation, 2021. https://www.rand.org/pubs/research_reports/RRA1393-1.html.

Shiah, R.L. (1994). The effects of computer-assisted instruction on the mathematical problem-solving of students with learning disabilities. DAI, 55(08A), 2347.

Simoncelli, A & Hinson, M. J. (2008) College Students' with Learning Disabilities Personal Reactions to Online Learning, Journal of College Reading and Learning, 38:2, 49-62, DOI: 10.1080/10790195.2008.10850308

Special needs children - know the types and know your rights - PBWS - Albuquerque & Santa Fe Law Firm - Trust, probate, estate, elder law. PBWS. (2021, December 8). Retrieved March 2, 2022, from https://pbwslaw.com/special-needs-children-rights/

Strauss, V. (2021, November 30). Why grouping students by ability makes sense. The Washington Post. Retrieved January 27, 2022, from https://www.washingtonpost.com/news/answer-sheet/wp/2013/06/07/why-grouping-students-by-ability-makes-sense/

Tuck, E., & Yang, K. W. (2012). Decolonization is not a metaphor. Decolonization: Indigeneity, Education & Society, 1(1).

Will, M. (2022, January 31). When school goes remote, many LGBTQ students lose a safe space. Education Week. Retrieved March 7, 2022, from https://www.edweek.org/leadership/when-school-go-remote-many-lgbtq-students-lose-a-safe-space/2021/03

Wu, X. Y., Han, L. H., Zhang, J. H., Luo, S., Hu, J. W., & Sun, K. (2017). The influence of physical activity, sedentary behavior on health-related quality of life among the general population of children and adolescents: A systematic review. PloS one, 12(11), e0187668. https://doi.org/10.1371/journal.pone.0187668

Appendix A. (Interview Guide)

1. What are your preferred pronouns?

2. What pseudonym would you like to go by?

3. Do you have any questions for me about my study before we start the interview?

4. Where are you from?

5. What are your affiliations on CU Boulder's campus?

6. Describe your identity and demographics, including your race, ethnicity, sexuality or other aspects you feel comfortable sharing.

7. Are you aware if you have any learning disabilities?

8. What was the level of your experience with online education in high school? Were all of your classes online? Describe the process of transitioning to online classes.

9. Did you take your Zoom classes in your home? Were you able to find an undisrupted area to work? If your family worked from home as well, how did the dynamics and relationships within your house change?

10. How were your grades or academic performance impacted positively or negatively by online learning?

11. How was your mental health affected by specifically online learning, not the entirety of the pandemic and its obstacles?

12. While learning virtually, was your work more independent than it had been in the past? Were you able to maintain connections with your peers and teachers even online?

13. How did your expectations around support within the educational system change after learning online? How did your perspective of your teachers change as they navigated the learning curve as well?

14. What did you look for most in college after learning online? What expectations of higher ed do you now possess after taking high school courses online?

15. After working and learning in your home, did your future plans or aspirations change? Are you inspired to pursue a career where working from home is an option? Do you prefer working remotely or in person?

16. How has your transition back to in-person learning on a large college campus been?

17. Do you feel that your demographics allowed you to have a more positive or negative experience while online learning? Did you know adolescents from other socioeconomic statuses, races or sexual orientations that were impacted back virtual learning in different ways from you?