

# **Digital Sovereignty: Recommendations for Successful Implementation of Datacasting in New Mexico**

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Submitted to  
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This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on the web without editorial or peer review.

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## **Abstract**

Although the New Mexico datacasting pilot project addresses the educational gaps highlighted in the 2018 Yazzie/Martinez lawsuit, it has several unique facets that require community context for successful deployment. Ethnographic fieldwork in New Mexico schools provided a better understanding of teachers' experiences teaching during the COVID-19 pandemic. This in turn provided background for how to most appropriately approach technology implementation for students. Recommendations for continued work and community-led discussions are suggested in order to ensure strong implementation of datacasting.

## **Acknowledgements**

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## Introduction

As the COVID-19 pandemic began to necessitate remote education, teachers, families, and students experienced a variety of challenges relating to a lack of connection on virtual and non-virtual levels (Batubara, 2021; Chakraborty et al, 2021; Lee et al, 2021; Roman et al, 2019). These challenges disproportionately affected students, families, and school systems already struggling under the weight of systemic education inequity (DeGagne, 2021; White et al, 2021; Whitley and Brown, 2021). One study done in 2019 showed that there were many factors that contribute the connection between the racial background of a student to their academic achievement: “differences in socioeconomic status, family cultural resources, school quality and racial composition, and bias and prejudice in schools all act as mechanisms that link race to academic achievement” (Merolla & Jackson, 2019). The gap in teacher retention is also clear, as it has been shown that retaining qualified educators in rural schools more greatly relies on the principal’s leadership and relationship building abilities than in urban schools (Preston, Jakubiec, & Kooymans, 2013). And although more diverse urban areas had a higher risk of COVID-19 infection, the counties that had a higher death rate were those with higher rates of disability and poverty (Abedi et al., 2020).

In Santa Fe, New Mexico, education inequity is a longstanding and documented concern. As evidenced by the *Yazzie/Martinez v. State of New Mexico* court case in 2018, the State was not providing the funds necessary for childrens’ education, which is constitutionally protected in Article XII, Section 1 of the New Mexico Constitution (Liu, 2019). The New Mexico Public Education Department (NMPED) has brought on consultant Ferdi Serim to implement an immediate solution. Working with the NMPED, Ferdi Serim, is currently working to supply over 500 datacasting boxes to families in over five rural school districts across New Mexico. Datacasting is a one-way system that allows students with limited broadband to access educational materials from their personal devices. It utilizes signals controlled by the New Mexico Public Broadcasting System, and can reach up to 98% of the state (Griswold, 2021). However, fieldwork conducted by the Digital Sovereignty team<sup>1</sup> in October and November 2021 revealed that barriers remain to installing these new technologies in classrooms. This has resulted in the development of this project *Digital Sovereignty: Connecting New Mexico. Connecting New Mexico* seeks to answer the question: how can technology be best introduced and integrated into spaces through collaborative community work?

This project takes a "step back" from the original planned implementation of technologies. It attempts to set the groundwork for future collaboration with Digital Sovereignty efforts by providing a set of ethnographically informed recommendations. This project will provide these recommendations by orienting around the following guiding questions:

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<sup>1</sup> Members of the Digital Sovereignty team: Mark Buono, Kyle MacPherson, Joe Martin, and Grace Rydout

1. How has the COVID-19 pandemic shaped experiences of teaching and learning?
2. And, in light of this question, how can small amounts of technology bring large amounts of social connection?

While this project will not implement any interventions, it will provide Serim's team with suggestions for new approaches to community-engaged work.

Semi-structured interviews with school faculty, families, and NMPED employees related to how the COVID-19 pandemic has shaped experiences of teaching and learning will help lay a foundation for the communities with which Serim aims to work. Combined with participant observation of meetings within the school districts, this foundation will provide recommendations to Serim about how to successfully integrate datacasting technology into families' homes. Future researchers can take these community-focused ethnographic techniques to other school districts and states that are attempting to implement similar technology. Ultimately, this project is a small step in a larger STEM journey that endeavors to help resist top-down, colonial approaches to education and advance digital sovereignty for under-served communities.

## Background

The New Mexico datacasting pilot project aims to rectify some of the inequities in access to education highlighted during the 2018 Yazzie/Martinez lawsuit. Although datacasting does not provide students with all of the capabilities broadband connectivity does, it should act as a temporary bridge for the students with limited to no broadband.

### Yazzie/Martinez Lawsuit<sup>2</sup>

In the 2018 court case, *Yazzie/Martinez v. State of New Mexico*, the presiding judge ruled that the State was not providing sufficient funds to give children the valuable education that is constitutionally established in Article XII, Section 1 of the New Mexico Constitution. The State was given until April 15, 2019 to take actions in providing schools with the resources they needed to supply students with a proper education. Although the State did increase funding, it did not involve the communities and was insufficient in addressing the needs of at-risk and Indigenous students (New Mexico Center on Law and Poverty, 2019). The budget increases focused on raising teacher's salaries while ignoring the issues facing Indigenous, minority, and at-risk students. It also did not provide students with adequate access to the Internet which led to a follow up ruling in 2021 that required the state to provide at-risk students and teachers a digital device and high-speed internet that is necessary to do work/school from home. The ruling also mandated that the State provide IT staff to assist school districts with any technological needs or difficulties they may have, which culminated in House Bills 10 and 93 (New Mexico Center on Law and Poverty, 2021).

On April 7, 2021, the Governor of New Mexico, Michelle Lujan Grishman, signed into law House Bill 10 and House Bill 93, calling for the creation of the Connect New Mexico Council and Broadband Development Division to help enact the Connect New Mexico Act. The Connect New Mexico Act requires the Connect New Mexico Council to grant funding for projects that will close the digital divide in New Mexico. The Broadband Development Division has been tasked with supporting local governments and agencies in planning and implementing their individual plans for providing broadband access to their residents. It also establishes the creation of the Office of Broadband Access and Expansion to help oversee the expansion of broadband access throughout New Mexico (Office of the Governor, 2021). The Council oversees \$130 million in broadband and infrastructure funds, and the broadband office holds statewide meetings to collect recommendations in order to best move forward with implementation of the broadband expansion (Office of the Governor, 2021). However, laying down fiber broadband to reach the over 20% of households without broadband access is expensive and time consuming (Melhado, 2021), and so in the meantime, the New Mexico Public Education Department (NMPED) has brought on consultant Ferdi Serim to implement a more immediate solution.

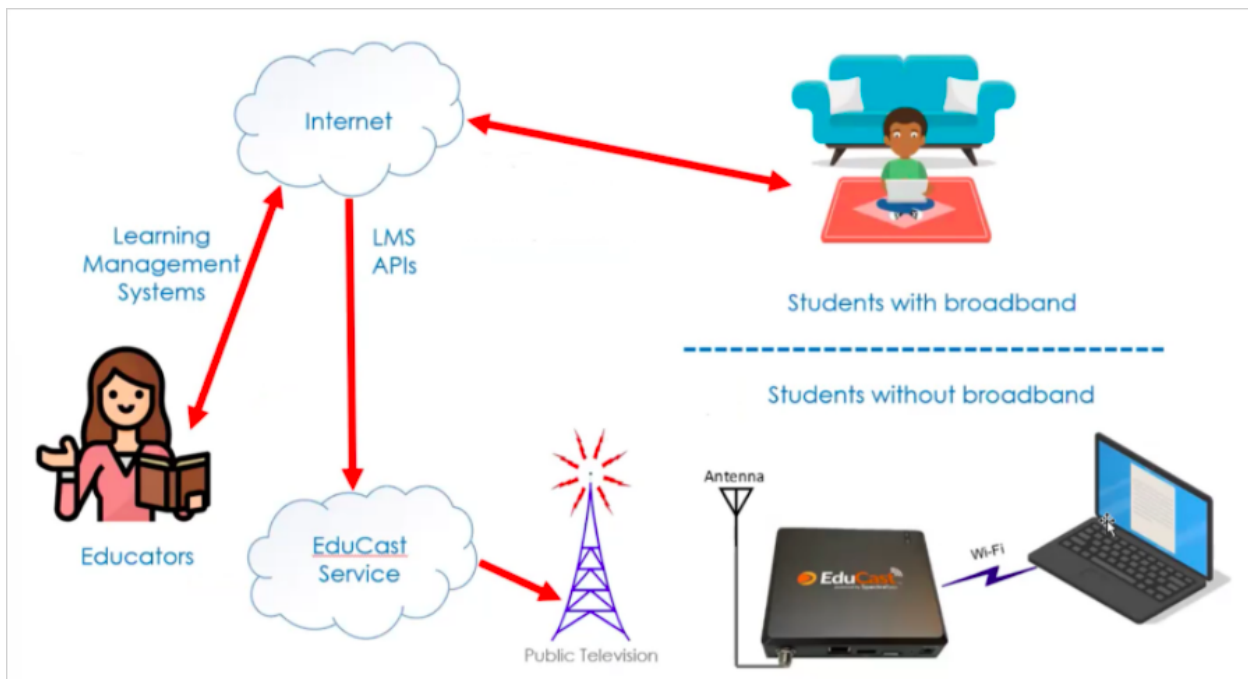
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<sup>2</sup> This section was written by Mark Buono, as originally seen in the Digital Sovereignty team's proposal.

## Datacasting Project

My sponsor for this project is Ferdi Serim. Serim, the founder of CLARO Consulting, is well versed in technology in the classroom. He has authored four books, all related to the benefits of technology-based classrooms, and he currently serves as the Digital Learning Innovator for the Community Learning Network (“About Ferdi Serim,” n.d.). Since August 2020, Serim has been leading a project team including Celia Einhorn, Creighton Edington, Renee Beth Poindexter, and Jason Ravitz to assist the NMPED implement the first New Mexico datacasting pilot project.

The aim of this project is to determine the impacts that datacasting has on New Mexico Public School students (Clarke, 2021). Datacasting, a combination of the words “data” and “broadcasting”, is essentially one-way wifi; it allows homes with little to no access to broadband or wifi to download materials to their personal devices over public television waves (“Datacasting”, n.d.).



In this graphic created by the New Mexico Public Broadcasting Station (NMPBS) and Educast, datacasting is explained. Educators using Learning Management Systems (such as Google Classroom or Canvas) first upload content to the Internet. For students with broadband, they are able to directly download and upload content to their personal devices. For students without broadband, but with datacasting, the content can be downloaded first to the EduCast Service, then to public television towers, and finally to the datacasting box via antenna. The datacasting box acts like a wifi router to connect to the student’s personal device in order for them to download the content.



Though this may seem primitive compared broadband, it is a cheaper and easier to install alternative while funding for broadband is obtained: “Some homes are simply too far for wireless towers that send internet to WiFi hot spots, and state officials have estimated a full extension of the state’s broadband system would cost around \$5 billion; larger than its entire annual education budget” (Attanasio, 2021a). Ideally this will help alleviate the issues that students from these homes have faced for the last 20 months, and will continue to provide assistance even when broadband becomes more readily available. This project was deployed under guidance by the New Mexico Public Education Department (NMPED) in direct response to the Yazzie/Martinez lawsuit (Clarke, 2021).

Several other states, most notably South Carolina and Pennsylvania, have successfully implemented similar datacasting projects, focusing on delivering content to students who cannot currently access school work from home (Indiana Public Broadcasting Stations, n.d.; Pennsylvania PBS, n.d.). However, Serim’s focus will be emphasizing at-home, family-led learning. Family Literacy software designed for adults and students to collaborate in literacy skill practice is included in each datacasting box delivered. Each family participating in the pilot program is encouraged to use this software at least three times a week for a minimum of 30 minutes each time. Additionally, the Communities of Practice that will provide feedback for this project will each be a triad of student, parent, and teacher, again encouraging collaboration between each person involved in students’ education.

This project has received high praise from officials at the NMPED, including New Mexico’s Secretary of State, Secretary Kurt Steinhaus (Attanasio, 2021b). Over \$1 million has been put into this project, ensuring a budget to purchase 2000 datacasting boxes and funds to pay those who participate in the Community of Practice (Clarke, 2021). However, in meetings with several of the selected pilot school districts, all of which were chosen due to their involvement in the Yazzie/Martinez case, many superintendents showed hesitation towards signing onto the project. As seen with Nicholas Negroponte’s failed 2005 One Laptop Per Child (OCPL) project, technology can only successfully be implemented in conjunction with communities (Souter, 2021). The project did not consider the needed infrastructure, teacher support, and the fragility of the devices before imposing the laptops into developing countries. *Digital Sovereignty: Connecting New Mexico* is a project with the goal to provide community driven recommendations for how to best implement and deploy the datacasting project in New Mexico.

## **Methodology**

Due to the shifting landscapes of New Mexico pandemic-era education, I had limited time to complete my research. This led to the decision to create an ethnographic project focused on collecting stories of teachers who taught during the pandemic, and from that developing recommendations to present to Ferdi Serim, his project team, and the New Mexico Public

Education Department (NMPED) about how to best introduce technology (like the datacasting system) into school districts in New Mexico, with a focus on connection and community.

### Semi-Structured Interviews with Educators

The main method I used was conducting semi-structured interviews with New Mexico educators. I first met with people from the project whom Serim knew were connected with many educators from around the state. Creighton Edington, the Student DART (Datacasting Action Research Team) Mentor, has helped Serim begin to assemble student teams to research the return path methods for families with limited to no wifi. Datacasting can aid with the downloading of materials, but Serim is also interested in seeing what is required to upload assignments and other materials back to Learning Management Systems like Canvas or Google Classroom. Edington has background teaching in many parts of New Mexico and thus has built connections with teachers from all over the state. Celia Einhorn, the Family Learning Liaison, also has a large list of educators with whom she has worked with in the past, and will also be very connected with the families participating in the Community of Practice that will be implemented once the project is in full swing.

I spoke with Edington and Einhorn about the intentions for my research so that they could direct me to the people they felt would provide valuable insight. Initially, I had intended to interview 20-25 teachers, parents, students, and IT directors from at least two school districts, including Taos and Cuba. I had also hoped to interview employees from the New Mexico Public Education Department (NMPED) so that perspectives from every person involved in technology implementation projects could be included.

Ultimately, I was able to conduct in-depth interviews with eight educators. They taught students ranging from preschool to highschool age, seven different subject areas ranging from science to history, and in five different school districts (including Albuquerque, Rio Rancho, Santa Fe, Taos, and Tucumcaí). Seven of the interviews were done virtually via Zoom video calls as most of the educators were located several hours from Santa Fe, and one was completed in-person at a local Santa Fe coffee shop. Although I was unable to conduct interviews with the 20+ people I had initially intended, each interview provided extremely valuable insight into the teacher perspective of education during the COVID-19 pandemic.

During each semi-structured interview, I asked about four main topics:

1. Their experiences teaching during the COVID-19 pandemic
2. The connections they had with students, parents, and other teachers during the pandemic
3. What technology their school district provided them and the technology they used during the pandemic

4. The non-technology related successes they felt occurred in teaching/education during the pandemic

As they were semi-structured interviews, oftentimes we discussed other topics as well, many of which were connected to their background as educators or other pieces of their life they felt passionately about. Discussions with educators were vital in my understanding of the communities the datacasting project will be impacting, but it was also vital that I understood the intricacies of the datacasting project itself.

### Participant Observation

When I sat in on initial meetings where Serim shared what the datacasting project was with school district representatives to encourage them to participate in the project, it was clear that the project was not only complex, but that each school district had a different interpretation of it. Thus, participant observation during meetings with Serim and with either various school district members or other project team members became a valuable way for me to get a stronger understanding of the pieces and views of the project. I was able to hear different opinions on how the project was running and be involved in the brainstorming process for when new ideas were introduced to the project. These experiences allowed me to then create recommendations that I feel will best fit the needs of the project.

### Project Timeline

#### **September 15, 2021: Introduced to Datacasting**

*The Digital Sovereignty Team met virtually with sponsor Ferdi Serim for the first time.*

#### **October 11, 2021: Initial Proposal Submitted**

*An initial project proposal was submitted based on the understanding of the project needs at the time.*

#### **October 20, 2021: Project Needs Shifted**

*During a meeting with the Pojoaque Public School District's superintendent, it was made clear that the needs of schools far exceeded simply providing connectivity for students, so a decision to shift the project was made.*

#### **November 9, 2021: New Proposal Submitted**

*A new project proposal focusing on creating recommendations for datacasting implementation based on community needs was submitted to Ferdi Serim and his project team.*

#### **November 11, 2021: First Conversation About Interview Contacts**

*I had the first meeting with Creighton Edington to discuss potential interviewees, and I also reached out to Celia Einhorn who also connected me with several interviewees.*

### **November 15 - 30, 2021: Interviews with Educators**

*A total of eight in-depth interviews with educators were conducted over the course of two weeks.*

### **November 7, 2021: Presentation to the New Mexico Public Education Department's Broadband Committee**

*I presented my research and recommendations to the NMPED's Broadband Committee, which included the Secretary of Education, Kurt Steinhaus.*

### **November 8, 2021: Final IQP Presentation**

*I presented my research and recommendations to my IQP cohort, advisor, and my sponsor's project team.*

## **Summary of Results**

There were three main takeaways from the interviews that I feel are valuable to guiding the recommendations to give to Ferdi Serim, his project team, and the New Mexico Public Education Department (NMPED). First is that each teacher had a different amount of support when implementing technology into their teaching. The second takeaway is that each teacher had a different amount of connection with families during the last year and a half. The third takeaway relates to student engagement and the benefits that academic contests and other student-driven projects can have on a school community. As predicted, these can be summarized into one key lesson: the first step to successfully implementing a technology and community based project such as datacasting is to really understand the communities that will be working with that technology.

### **Technology Support**

When asked about the support their school districts gave them in regards to using new technology during the pandemic, some teachers expressed the phenomenal community building that occurred between teachers. Stories of instructional Youtube videos being created and passed around by technology adept teachers, collaborative staff meetings occurring in the cafeteria large enough to seat everyone six feet apart, and engaging and accessible Zoom webinars teaching the basics of Canvas or Google Classroom were all shared. There was one high school teacher who articulated this experience clearly:

“None of us as teachers came in that year thinking, ‘Oh, we better get ready to be ready to teach online,’ you know. So then all of a sudden, every

teacher did something different. And that's kind of what started things out bad was kids are, you know, creatures of habit. And if one teacher is doing one thing and another one is doing something else, you know, they're gonna struggle. And I think that's where our school did really well. Our leadership team came together, and we as instructors all came together and said, everyone kind of came together and we did this deal where, 'what's working for you?' And when we looked at it, most teachers what was working was pretty close to each other's model, I guess you could say.

[...] But then ultimately, this doesn't work without the students knowing how to use their end of the technology. And I think that's where a lot of people didn't realize, they just thought, 'Oh, kids are smart, they already know how to manipulate their phones.' Well, that's great, it's because they want to manipulate their phones. And I hate to say it, kids are the smartest people in the world because if they can figure out how to get out of something, they will. [...] So one of the things I would do, me and another teacher, we would put together YouTube videos and we'd pass them around to all the other teachers. [These were also then added to Google Classroom's materials section for students to reference.]"

Most of the high school teachers I spoke with found that technology engagement was especially successful when they allowed students to use devices they were comfortable with: "Phones were our friends [...] Well, in my class, I embrace them if they're using it for school. Because they can get Canvas on it, they can get Powerschool on it, and I had graphics kids actually doing graphic work on their phones." Another directly noted the power these personal devices could have in comparison to the old laptops and Chromebooks delivered by the school: "Many of my students just do all of their work on their phones [...] Maybe that's another tool we need to emphasize. It's not just the Snapchat. It's got a lot of other functionality that's probably even stronger than the computer the school checked out to you."

However, some educators I spoke to wore confused faces when I asked about support and shook their heads when I asked if there was a uniform system their school used to deliver the technology they used in their classroom. These educators had more anecdotes about the overwhelming amount of work they had than about any positive shifts in their school community. Their stories emphasized the importance of strong technology implementation, as said well by a high school teacher:

"I don't know that very many teachers know what the technology can do and what they can do with the technology. I think that's really important [...] The implementation of technology really needs to use the same skills that we need to teach under technology. There is a way to do it; and there is a way not to do it.

And I saw mostly things that are not the way to do it, when they do it with adults. It's how you roll out this technology that's so critical."

This teacher discussed how "brutal" sitting through eight-hour long training sessions about technology was, especially considering the lack of interactive components. Instead, he recommended shorter presentations, and chances to work one-on-one with a technology support person to receive more meaningful training. This highlights the importance of understanding a community before implementing a project with as many complex pieces as the datacasting project. For teachers who received limited support in technology implementation, they may find the implementation of datacasting too overwhelming to even consider, even though it should require almost zero effort on their part. Understanding how a community might receive a project is vital to the success of their engagement with the project.

### Connection with Families

Parent-teacher connection was another topic that had polar opposite responses from the teachers interviewed. Some cited an increase in the number of parents who attended virtual parent-teacher conferences last year, one saying that instead of the typical 35 families that attend, 58 came last year. They assumed that the accessibility and flexibility that virtual conferences provide allowed more parents to attend. One middle school teacher I interviewed also told me about a system they had created that encouraged more one-on-one interactions with parents. Each week, they awarded a few students with a prize to celebrate an accomplishment the student had that week. A parent then had to be the one to collect the prize, allowing the teacher to speak with the parent about their student's accomplishment and have a face-to-face interaction with them.

However, other teachers, primarily high school teachers, shared concerns that they had no idea how engaged their students' parents were due to the lack of communication they had with parents. A concerned high school teacher passionately shared their view on lack of family engagement:

"Already, at the high school level, parents think, oh you know, it seems like parents think that kids can bathe and clean themselves, and they can drive so they don't really need them as much. It's [the] opposite. High schoolers need their parents probably more so, just need them differently. And that's one thing that if I could tell parents, I would. Just because they can feed themselves and clothe themselves and bathe themselves and drive doesn't mean they don't need you."

Other high school teachers echoed the message, being told by parents to stop trying to contact them, "that if their student isn't doing something, then that is just the way it is." One

teacher said a common response to any messages telling parents about missing or late work was, “Well, I told him to get it done!” Nevertheless, these high school teachers also understood that family circumstances may have forced their students to babysit younger siblings or work to financially support their family during the day and then complete schoolwork at night: “There was a session log [in the learning platform] that I could go in and tell when the students had logged in and done the work. And they were logging in at all hours of the night. That was another thing about it. A lot of kids were working in our small town [...] They would often work during the day and try to do this [schoolwork] at night. And that didn’t work out very well at all.” They were aware that this could reduce the interactions they were able to have with family members, and also generally knew that teenage students were less likely to be as engaged with their parents. Again, without an understanding of parent engagement in a particular community, implementing a family-centered project that requires parent-teacher connection could become challenging.

### Student Engagement

Academic contests and project-based classes were brought up by a few of the teachers I interviewed, and I feel they are valuable to highlight. One stated, “[Academic contests are the] fullest way to approach education.” They spoke of the collaboration that was able to occur between different educators as students ask for feedback on different aspects of their project. These projects are also student-led endeavors, as the teachers and parents only act as supports throughout the process. For these teachers whose classes are based on production-oriented assignments rather than lectures, creating remote-friendly projects was challenging. However, these are also the educators who are most likely to find creative solutions to their problems and have a lot of connection with and confidence in their students. Serim’s datacasting project is already exploring the idea of how datacasting can creatively be utilized, by bringing in artists, videographers, and other community members who can add content and value to the system. I believe the teachers and families already involved in academic contests or project-based classes are in the schools that have the capacity and support to be excited about the creative components of a project like datacasting. I believe these students and teachers and families are the ones who will be excited to take the time to test and share their thoughts about datacasting, and contribute their ideas to the “cookbook.” Taking the time to get to know a community is the best way to uncover what role they might be able to best play in the implementation of the datacasting project.

### **Recommendations**

## Recommendation 1: Continue Interviewing Teachers, Parents, and Students

*Continue to conduct similar interviews with more teachers, as well as parents and students to develop the strongest possible understanding of how to shape the datacasting deployment to fit the needs of a specific community.*

I would strongly recommend that the Supercomputing Challenge Datacasting Action Research Teams (DART teams) lead the interviews. These are driven students already engaged in conducting meaning research and creating creative models. Being members of the community that they are interviewing will allow them to find more contacts than I was able to, and help the interviewee feel comfortable engaging in conversation. This is also a way for more community members to become involved in the datacasting project without having to commit time each week towards the Community of Practice. Instead, I found that many teachers connected with current project members were happily willing to participate in a one-time, one-hour maximum interview. Additionally, this will provide background information about school district communities that could be useful in future discussions with them regarding the datacasting project.

- a. *(For my recommendations of questions to ask and ways to approach the interview process, please see the Appendix.)* If I were to add a question to the interviews that I conducted, I would ask more specifically what assignments or content teachers were assigning on Canvas or Google Classroom. This would give the datacasting project team a better understanding of how a student from that classroom/school district might be using the datacasting system. For students with teachers who assign very little homework via Canvas or Google Classroom, datacasting may seem like more of a burden or “extra work” rather than an aid. Whereas teachers who actively use Canvas or Google Classroom for lots of at-home work will be able to continue their already existing practices and hopefully just reach more students who may have not previously been able to access assignments from home.

## Recommendation 2: Restructure Discussions with School Districts

*Restructure the initial discussion about datacasting with school districts by asking more questions.*

First, pitch the product as the bare minimum of what it is: one-way wifi that can bridge the gap for students before broadband is accessible for all NM students. Then have a discussion (engaging activity) with the teachers/school district/community to understand what other pieces of datacasting can be beneficial to them (ex. Family Literacy program, “personal Cable channel,” community conversation through Community of Practice and cookbook, engaging in producing content projects with artists and other community members, etc). These discussions can happen throughout the deployment process, especially for this initial pilot project, but ideally in future



projects, it will be something that occurs at the very beginning of the meetings with school districts. These discussions can be guided by the questions listed below, and also by any background information that is collected by interviews done by the school district's DART team. This will enable the project team to simultaneously begin the implementation while also getting to know the community and its needs.

1. How many of your teachers use Canvas or Google Classroom on a regular basis to assign homework? *[Although this is a somewhat obvious question to begin with, I think it's important to ensure that the school district understands that the main purpose of datacasting is to provide the content from Learning Management Systems like Canvas and Google Classroom.]*
2. Was the technology being used in classrooms today already set up prior to the beginning of the COVID-19 pandemic? *[If it was, this is likely to indicate that the school district has had time to develop their technology trainings and such, so are less likely to have teachers overwhelmed by the prospect of datacasting.]*
3. Tell me about your training sessions related to technology (personal devices, Canvas or Google Classroom, communicating with families virtually, etc.) *[This can be an indicator of how unified the school district is in terms of providing support for their teachers when it comes to technology deployment, and also in terms of how many different types of lesson deployment a student might be receiving (ex. if they have multiple teachers, are they all delivering content through the same platform?).]*
4. Are any students involved in academic contests or project-based classes? *[If yes, and if they seem enthusiastic about the idea of contributing to the Community of Practice or the other more creative aspects of the datacasting project, the below points can be discussed.]*
  - a. This project we want to both be a bridge for those without good wifi, but also a tool that can be used longer term. How can the creative/tech-savvy teachers get involved in sharing their ideas in the Community of Practice without feeling like it's a burden/extra work?
  - b. I know that Supercomputing is getting involved in this research, but how else can the structure and benefits of academic challenges be incorporated into family-centered learning?
5. For the school districts that have teachers who want to be more engaged than just continuing to push content, and who also are interested in fostering the family-led learning idea, consider the idea below:

- a. Have the implementation be teacher-led to ensure that they can pitch it to their students and families in a way that best fits their classroom community. For teachers that already have strong connections with parents, great, they can encourage the use of the Family Literacy Software and other family-centered activities as planned. For the teachers that don't have many connections with parents, they may want to use datacasting as a way to assign family-based assignments on Canvas/Google Classroom before pushing the other parts of datacasting onto the families.

### Conclusion

My fieldwork with the New Mexico public schools, while brief, exposed me to the difficulties of education, particularly education during a pandemic. The recommendations I provide aim to bring in the considerations and needs of educators, families, and students to ensure a successful deployment of datacasting in New Mexico. My hope is that these recommendations will not only serve projects in New Mexico, but also technology implementation projects across the country.

## References

- Abedi, V., Olulana, O., Avula, V., Chaudhary, D., Khan, A., Shahjouei, S., Li, J., & Zand, R. (2020). Racial, Economic and Health Inequality and COVID-19 Infection in the United States. *medRxiv : the preprint server for health sciences*, 2020.04.26.20079756. <https://doi.org/10.1101/2020.04.26.20079756>
- N.a. N.d. *About Ferdi Serim*. CLARO Consulting. <https://claroconsulting.net/>
- Attanasio, C. (2021, April 30). Judge: New Mexico must give at-home students fast internet. *AP News*. <https://apnews.com/article/nm-state-wire-new-mexico-coronavirus-technology-health-db-c30b2dfc08fe1243a2c941680fa10f>
- Attanasio, C. (2021, November 19). New Mexico sees TV tech as one fix to K-12 internet divide. *The Washington Post*. [https://www.washingtonpost.com/politics/new-mexico-sees-tv-tech-as-one-fix-to-k-12-internet-divide/2021/11/19/1f946646-496d-11ec-beca-3cc7103bd814\\_story.html](https://www.washingtonpost.com/politics/new-mexico-sees-tv-tech-as-one-fix-to-k-12-internet-divide/2021/11/19/1f946646-496d-11ec-beca-3cc7103bd814_story.html)
- Batubara, B. M. (2021). The Problems of the World of Education in the Middle of the Covid-19 Pandemic. Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences, 4(1), 450-457.
- Bentley, K. (2018, June 8). *School busses become wifi hotspots*. Government Technology. <https://www.govtech.com/education/k-12/school-buses-become-wifi-hot-spots.html>
- Cameron, P. (2021, January 21). Rural schools battled bad internet, low attendance in the pandemic. Will spring semester be better? *New Mexico In Depth*. <https://nminddepth.com/2021/01/21/rural-schools-battled-bad-internet-low-attendance-in-the-pandemic-will-spring-semester-be-better/>
- Chakraborty, P., Mittal, P., Gupta, M. S., Yadav, S., & Arora, A. (2021). Opinion of students on online education during the COVID-19 pandemic. *Human Behavior and Emerging Technologies*, 3(3), 357-365.
- Clahchischiligi, S. R. (2021, July 8). 'It's exhausting': how Navajo students overcame the pandemic school year. *The Guardian*. [the-guardian.com/us-news/2021/jul/08/how-navajo-students-overcame-pandemic-school-year](https://www.theguardian.com/us-news/2021/jul/08/how-navajo-students-overcame-pandemic-school-year)

- Clarke, C. A. (2021, November 22). NMPED: Families Get Receivers For Datacasting Pilot Project. *Los Alamos Daily Post*.  
<https://ladailypost.com/nmped-first-families-get-receivers-for-datacasting-pilot-project/>
- N.a. N.d. *Datacasting*. Indiana Public Broadcasting Stations. <https://ipbs.org/datacasting/>
- N.a. N.d. *Datacasting*. KET Education. <https://education.ket.org/datacasting/>
- N.a. N.d. *Datacasting*. Pennsylvania PBS.  
<https://pennsylvaniapbs.org/learning-at-home/datacasting/>
- N.a. N.d. *Datacasting*. South Carolina ETV Commission.  
<https://www.sctv.org/education/services-school-districts/datacasting>
- DeGagné, M. (2021). Bringing the Tools of Success to the Indigenous Community in the Time of Covid. *Child & Youth Services*, 1-4.
- Grisham, M. L. & Stewart, R. (2020, June 29). *Internet Connectivity Concerns on Tribal Lands: Guidance Document*. State of New Mexico Public Education Department  
[https://webnew.ped.state.nm.us/wp-content/uploads/2020/04/Revised-Tribal-Guidance-Document\\_FINAL\\_6.25.2020.pdf](https://webnew.ped.state.nm.us/wp-content/uploads/2020/04/Revised-Tribal-Guidance-Document_FINAL_6.25.2020.pdf)
- Griswold, S. (2021, October 21). New Mexico PBS to broadcast educational materials to 100 students' computers. *Source NM*.  
<https://sourcenm.com/2021/10/21/new-mexico-pbs-to-broadcast-educational-materials-to-100-students-computers/>
- Guzmán, A. I. (2021, June 19). The great disconnect: How New Mexico's broadband desert is impacting students, education. *Las Cruces Sun News*.  
<https://www.lcsun-news.com/story/news/2021/06/19/new-mexico-internet-digital-access-impact-students-education/7745306002/>
- H.B. 10, 2021 55th. Legislature, New Mexico (2021)  
<https://www.nmlegis.gov/Sessions/21%20Regular/bills/house/HB0010.pdf>
- H.B. 93, 2021 55th. Legislature, New Mexico (2021)  
<https://www.nmlegis.gov/Sessions/21%20Regular/bills/house/HB0093.pdf>
- Kamentez, A. (2021, November 23). Parents are scrambling after schools suddenly cancel class over staffing and burnout. *NPR*.

<https://www.npr.org/2021/11/23/1057979170/school-closures-mental-health-days-families-childcare-thanksgiving-break#:~:text=Schools%20and%20districts%20around%20the, and%20sometimes%20even%20student%20fights>

KRQE Staff. (2020, October 24). Albuquerque extending access to free WiFi hotspots in the community. *KRQE*.  
<https://www.krqe.com/news/education/albuquerque-extending-access-to-free-wifi-hotspots-in-the-community/>

Lee, S. J., Ward, K. P., Chang, O. D., & Downing, K. M. (2021). Parenting activities and the transition to home-based education during the COVID-19 pandemic. *Children and Youth Services Review*, 122, 105585.

Liu, S. (2019, May 8). *LFC Hearing Brief*. New Mexico Legislative Finance Committee.  
<https://www.nmlegis.gov/handouts/ALESC%20062619%20Item%204%20-%204.2%20LFC%20Brief%20-%20Implementation%20Plan%20for%20Yazzie%20and%20Martinez%20-%20May%202019.pdf>

Melhado, W. (2021, August 25). Dot-com desert. *Santa Fe Reporter*.  
<https://www.sfreporter.com/news/coverstories/2021/08/25/dot-com-desert/>

Merolla, D. & Jackson, O. (2019). Structural racism as the fundamental cause of the academic achievement gap. *Sociology Compass*, 13(6). <https://doi.org/10.1111/soc4.12696>

New Mexico Center on Law and Poverty. (2019, July) *Yazzie/Martinez Overview*. New Mexico Legislature.  
<https://www.nmlegis.gov/handouts/IAC%20080119%20Item%202%20Yazzie%20Martin%20v.%20State%20of%20New%20Mexico.pdf>

Office of the Governor Michelle Lujan Grisham. (2021, April 7). *Gov. Lujan Grisham signs measures advancing broadband connection and development*. Office of the Governor Michelle Lujan Grisham.  
<https://www.governor.state.nm.us/2021/04/07/gov-lujan-grisham-signs-measures-advancing-broadband-connection-and-development/>

Preston, J. P., Jakubiec, B. A. E., & Kooymans, R. (2013). Common Challenges Faced By Rural Principals: A Review of the Literature. *The Rural Educator*, 35(1).  
<https://doi.org/10.35608/ruraled.v35i1.355>

- Román, D. X., Castro, M., Baeza, C., Knab, R., Huss-Lederman, S., & Chacon, M. (2021). Resilience, collaboration, and agency: Galapagos teachers confronting the disruption of COVID-19. *The Journal of Environmental Education*, 1-10.
- Souter, D. (2021, January 13). Inside the digital society: lessons from little laptops. *The London School of Economics and Political Science (LSE)*.  
<https://blogs.lse.ac.uk/parenting4digitalfuture/2021/01/13/one-laptop-per-child/>
- N.a. N.d. *Tech Connect*. Santa Fe Public Library. <https://santafelibrary.org/tech-connect/>
- White, A., Liburd, L. C., & Coronado, F. (2021). Peer Reviewed: Addressing Racial and Ethnic Disparities in COVID-19 Among School-Aged Children: Are We Doing Enough?. *Preventing Chronic Disease*, 18.
- Whitley, J., Beauchamp, M. H., & Brown, C. (2021). The impact of COVID-19 on the learning and achievement of vulnerable Canadian children and youth. FACETS.

## Appendix

### Interview Questions

I was trying to answer: how can technology be better introduced and integrated into spaces through collaborative community work? How has the COVID-19 pandemic shaped experiences of teaching and learning? And, in light of this question, how can small amounts of technology bring large amounts of social connection?

From the teachers I interviewed, I wanted to get an understanding of their experience with technology, connection, and community.

1. What was teaching during the past year and a half like for you?
2. What does connection mean to you (in relation to education)?
3. What sort of technology did your school district provide?
  - a. Did you receive any support in learning how to use it?
  - b. Did you continue to use it after students started returning to in-person learning?
4. Were there any non-technology focused “wins” that your school district/classroom had? Or that you wish you had?

Knowing that I want this research to continue through students in the Supercomputing Challenge Teams, I would recommend they ask the same questions I listed above to more teachers, as well as parents and students (just changing the wording of the first question to fit their role). I would also recommend asking another question under number three to inquire about what they use Canvas/Google Classroom/other learning management systems for. Specifically how often they use those websites for at-home work.

I would also recommend that they interview principals, superintendents, and IT directors from their school district. I had also intended to have the perspectives of PED employees. My recommended questions are as below:

From PED employees and principals/superintendents/IT people, I want to learn more about what technology was put in place and why, as well as their approach to implementation.

1. What does connection mean to you (in relation to education)?
2. What sort of technology did the State/your school district provide?
  - a. What problem(s) was it looking to solve?
3. Explain to me how you implemented it.
  - a. Was it well received?
  - b. Did it go according to plan?
  - c. Is it being used/helpful as intended now?
4. Were there any non-technology focused “wins” that the State/your school district had?

## Notes from Interviews

Below is a summary of the notes that I coded from each interview I conducted. No names are mentioned to keep the interviewees anonymous. Some notes were shortened to protect the privacy of the interviewees.

*Key (sometimes the shades of highlighting are slightly different than shown which was done to separate ideas that fit into the same code)*

Parent Connection

Student/Family Connection

Quotes About Feelings

Technology

Student Connection

Deployment of Programs

Teacher Connection

Taos high school computer teacher:

- Changing school schedule: “shit got old”
  - “At the time, it was a new science. Best laid plans, you tweak it as you go. And that’s what we did. But there’s only so much tweaking, you know what I mean. There needs to be consistency. So eventually, we would say, ‘No, enough change, enough of the changing. There needs to be some consistency.’”
- “So come to find out that elementary school teachers didn’t have to do that? That was bullshit. Wait a second, that’s bullshit.”
- “We all know it’s [wearing masks] a pain in the ass”
- “Or I’m getting responses, like I just finished a lecture in business, and then I get an email from a mom saying, ‘I really liked your lecture.’ [laughs] And so the moms were taking part, or the parents were taking part, you know what I mean, and so that was different, you know what I mean. Which could be a positive with the Family Literacy. But it was weird to hear that, you know, situation.”
- Has less connection with parents
  - Less than 5% came to parent-teacher conferences compared to a more usual 10%+ in previous years
  - “Already, at the high school level, parents think, oh you know, it seems like parents think that kids can bathe and clean themselves, and they can drive so they don’t really need them as much. It’s opposite. High schoolers need their parents probably more so, just need them differently. And that’s one thing that if I could tell parents, I would. Just because they can feed themselves and clothe themselves and bathe themselves and drive doesn’t mean they don’t need you.”



- Assigned her senior advisory students to have their parents email her. That allowed her to start a mailing list with parents, let them know that she was “starting up a line of communication.” If a parent didn’t have email, she would ask for a text from them instead.
  - However, parents are busy, and she would maybe get a response, but then hear nothing more after that. At the high school level especially, parents are just more hands off.
- But students did have a closer connection to family
  - “A lot of, ‘Why weren’t you in class?’ ‘My dad decided we were going fishing.’ I got that. A lot more family, ‘I’m sorry miss, we went here, we went there.’ They took the time to see other family. They took the time to do things [...] There was a lot more attention to family, within their little immediate family. That’s what I noticed.”
  - Got assignments saying that being with family was their favorite part of COVID, but this year, it’s being with friends
  - A lot of students assisted working parents by taking care of their siblings or something similar, and that was sometimes why they would miss class
- Assigned family homework to try to help students use their resources at home, but didn’t find it to be very successful
  - “I give family homework though, that’s one of the things that they tried to do. I would send a publication home: ‘Okay, I want you to talk over this with your parent. Get it signed.’ And that’s part of the homework. And they’re like, ‘What do you mean I gotta get it signed?’ And I’m like, ‘I want you to talk to your guardian or your parental unit. I want you to actually have a conversation with them. At the high school level, you kind of have to actually force that issue. I’ve had kids tell me, ‘I go right to my room. I come home, I go right to my room.’ That there’s not that conversation.”
- Students weren’t asking questions during lecture as much, and instead reaching out afterwards
- “But I didn’t have the heart to say, ‘I’m not going to address your problem at eleven o’clock at night’ because I knew the bandwidth was an issue, and that was the time that they had to do the homework. Because they had little brother on, they had little sister on. In fact, I had kids that would say, ‘Miss, I’m sorry I’m late to class. I was getting my little sister on their school. I was getting my little brother on their school.’ Or ‘Sorry I’m late, Miss. I’m watching my two year old brother’ and I’m watching this video of a high schooler with his two year old brother on his lap [...] But I didn’t have the heart to say, ‘I can’t do this now.’ If it was quick and dirty, I would go ahead and answer it. But there was no set ‘Hey, I’m home now.’”
- Students are now much more polite and respectful, and engaged with their work

- “The first, probably, four or six weeks of school, I didn’t have to poke or prod or anything on kids doing homework. It just got done. And it was getting done at record paces. I’m like, ‘I’m almost, weeks to go for these nine weeks, and I’ve already got classes who are done with my normal repertoire. And so I have to go, ‘Wow, what am I going to give them now?’ So that’s kind of a good problem to have [*laughs*].”
- When on video calls (Teams), she found that having cameras on was vital to connection with students
  - “Now I’m only seeing *this* much of them [*gestured to top half of face, indicating that the bottom half is covered by a mask*], and last year I saw a picture. I made them put pictures on Canvas, I made them put pictures on Teams, I made them do FlipGrid so I could see video, so I could see pictures of them, and so I could hear voices and recognize voices more than I could see faces. So that was a change, definite change.”
- “Connecting with the students: I think the connection when you’re up close and personal, face-to-face with the student, it’s far better, umm, than via Zoom. And then Zoom, the only thing I would say is that there has to be, you have to have that video input [...] And I think we will always have that connection with our students because it’s the year that, ‘Oh yeah, I remember teaching with my students when we all had to wear masks.’ So that’s a connection. We all know it’s a pain in the ass, you know what I mean.”
- “I didn’t have much information from the other teachers in the other district [*I’m assuming she meant in the rest of the school district since I asked about information other teachers in the school district got*] except for many of our teachers who had kids at the elementary school level.”
- Sharing ideas about what could change was actually productive--it was the first time she felt teachers were being listened to
  - Lots of collaboration between teachers
  - “One of our teachers who isn’t here anymore tried to do some ET [?] for teachers, so some social emotional stuff. That was kind of cool. We did that Wednesday mornings at eight o’clock if you wanted to. We did that a couple of weeks. And then we had some meetings, like leadership team meetings, which were all the department heads. And then staff meetings. And then we had collaboration with our own departments, right. And so we’d bitch and complain [*laughs*]. Normally, you get that in a teacher’s lounge, but we were having that on Zoom too. But we’d just sit there and say, ‘Why are doing it this way? Why are we...?’ And then we’d bring it up. And it sounded like, and I guess it felt like to some extent, we were being listened to, umm, which is kind of odd because normally we’re not. You know, we’re the front line people when normally we’re pooh poohed. Legislature does it, governors do it [...] and the problem with admin, like principals, is that they’re too far out of the classroom for too long. They forget. And the same

problem with the superintendents. They've been too far out of the classroom for too long. And so who should they be listening to? Us.”

- More connected to colleagues this year now that they are back in person
  - Being a teacher is already an isolating position, but especially so last year
  - Had a great connection with her boss last year (she was a good support during a really hard year), but they've lost that connection this year
- Everything was already on Canvas, so didn't really have to adjust that too much
  - Easy to push out quizzes, assignments, grades
- Found it hard to separate students virtually like she tends to do in person (teaches multiple levels of the same class all at the same time, so in person she can keep the different levels in different areas of the classroom to work together, but didn't find that to be easy virtually)
- Answering questions outside of class was hard--students all used different devices/communication methods, and used them to a varying degree of correctness
- “Newer teachers who were good at this, ‘Hey, I found a way to do this. I found a way to do that.’ They would email out, you know, ‘Do it this way.’ They were sending videos: ‘You could do this, you could do that.’”
- Mac school, but also a Microsoft Office school, so that is tricky
  - The software the school has (like in the computer labs) wasn't always available to students at home on their Macbooks given to them. She had to find resources that had net versions accessible to most students.
- She was able to check out the robots that she had gotten at the beginning of the pandemic so that students could still use them for assignments at home (ex. Have the robot do this and take a video)
  - “But when they didn't have access, when they couldn't install software, you know, do any of that, it was super limiting.”
- There was a lot of having to coordinate tech even if the software was available to students. She would have to send students to IT to pick up items or come up with solutions herself (even reverting to asking them to drop things off at the school so she could pick them up).
  - Even things as basic as needing a mouse (because using a trackpad for graphic design is not ideal)
  - Not having a printer/scanner was hard - but that did teach them how to scan using their phone
    - “They did learn a lot of technology, but it was just different technology.”
  - Phones were lifesavers: “Phones were our friends [...] Well, in my class, I embrace them if they're using it for school. Because they can get Canvas on it, they can get Powerschool on it, and I had Graphics kids actually doing graphic work on their phones.”
- Went one-on-one with tech because of the pandemic (drive-by distribution and collection)

- Elementary schoolers got iPads, middle schoolers and high schoolers got Chromebooks or Macbooks
- Wants more options of devices for the students that are using a variety of software:
  - “Students need to be able to learn how to install software. I mean, that’s something they need to learn how to do. We’re so afraid they’re going to mess up a computer, you know, we don’t let them do things like that and we need to.”
- “We got through the year. The kids are more tech savvy, the teachers are more tech savvy. Teachers that didn’t want to be more tech savvy are more tech savvy. They had to be. Learning different ways to do certain things is not necessarily a bad thing, you know what I mean.”
- Spent the summer watching webinars and such on how to use different tech tools (there were a lot of stipends summer 2020 to learn these things)
- “But at the same time, the PED was putting out stuff, and so theirs was changing what we needed to do. ‘Are we testing, or are we not testing? No. Are we getting evaluated, or are we not getting evaluated? Yes, go ahead and do this. Well, no, we’re not getting evaluated, don’t worry about it.’ So there was this constant, you know, back and forth from PED as far as our expectations. So that was different. Major burnout. And then, oh, ‘Do you want to have an extended two weeks?’ I don’t even think we voted on it, I think we were just told, ‘There’s going to be two extra weeks.’ Because of the prior year when we gave everyone two weeks off, not knowing, before we went on lockdown. And so, it was like, ‘Really?’ So not only did we have this hellacious year, but then we get two extra weeks of it [*chuckles*].”
- “When I found out that elementary school teachers, you know we had to have like, we had a block schedule. So in a normal hour and a half long class, we were told we had to have the kids on for 45 minutes. There was no reason for that sometimes. And sometimes we could do that because of power outages, because of internet outages, you know what I mean, what have you. So come to find out that elementary school teachers didn’t have to do that? That was bullshit. Wait a second, that’s bullshit.”
- “We definitely had some wellness. I took advantage of, it was called Echo, with UNM and some other things. They were doing some social emotional learning and some teacher stuff, teacher wellness. And then best practices. And they would do that Tuesdays and Wednesdays after school. So I took part in some of that.”

Taos high school language arts teacher

- “I regret that we didn’t serve the students very well”
- “Thank you for letting me share my experience. Because you’re the only one who I’ve actually ever shared it with.”
- monitor/follow up with the families of students who weren’t doing their work
  - Made a lot of phone calls
  - Had to make a lot of notes on those calls

- Brought plagiarism issues up with parents (only if he had the specific evidence of where they cut and pasted from), but not administration
- Had to do a lot of communicating (texting, phone calls) with parents when students wouldn't submit work
  - When he'd reach out to parents, he would occasionally get responses (especially when discussing plagiarism problems), and most of the time there was improvement
  - However, with his concerns about students logging in to do the work so late at night, he had parents saying that they assumed that having their kid work a job during the day and do school at night would work. He had to explain that school is still a lot of work
  - Would get a lot of parents saying things like, "Well, I told him to get it done!"
  - It would get complicated (but wasn't uncommon) to communicate with families who had tension in communication between adults. Those calls would get referred to the social workers and admin at school
    - His job was just to share academic progress with parents, not become a liaison between adults
- Didn't really hear about other teachers' experiences during the virtual year
- "I wanted to be a team player, and so I took on this class. But nobody really asked me anything about what I was teaching or anything."
- Email was, and still is, the primary way teachers communicated with each other. There isn't a lot of time when teachers sit down with each other and really take the time to listen to each other anymore.
- Used Canvas for assignments and Teams for the class meetings each week; Powerschool for grading
- Canvas, Teams, Get Literacy
- Had a one-to-one device program for students
- "It [online teaching platform] was just sort of given to me [...] There was like a two hour workshop in August of 2020. And that was it."
- Suggested I look up the Taos airport tech park that they were planning on building
  - Has heard about a lot of tech projects that were in the works of happening, but then don't actually happen

### Taos high school science teacher

- "It's [sitting in 8 hour staff development meetings] just brutal"
- Parent connection was pretty much the same
  - Conferences virtually were actually better (more accessible for parents)
- High schoolers are independent, doesn't really think they would form that triad of connections with their parents and teacher

- Maybe they'd be willing to help out with their younger siblings or parents working with younger kids
- Close connection with students: "You really got to know some of these students well, got to know what their backgrounds were and their challenges and their successes. And I was hoping that that bit of information would make a change in the whole school system, transcountry. That we could really start to focus on this smaller group of kids for an extended period of time. That was pretty powerful."
- A 4 day-a-week advisory was formed
  - Was a powerful idea, but doesn't necessarily think that all teachers are using it to develop a stronger connection with students, create those social emotional skills
  - Has ideas for how to shape these to create even stronger communities of students (ex. Make his science based to allow them to work on projects, get ideas for skills to develop for their future, etc.)
- There really wasn't any collaboration between teachers, nor any assistance provided by the school
  - Was there collaboration in delivering content virtually?: "Not here. Not at all. We were all on our own. We didn't even set up our Canvas pages the same as a school. They were all different; different values and different ways of doing things."
    - Very connected to their phones: "Many of my students just do all of their work on their phones [...] Maybe that's another tool we need to emphasize. It's not just the Snapchat. It's got a lot of other functionality that's probably even stronger than the computer the school checked out to you."
- Used two websites/programs: Physics Classroom and CK12 (which comes from the California Board of Education, and he thinks is really well done--really interactive, better for core-level material)
  - Pre-published, pre-vetted resources
  - Wanted to find resources that students with all devices (especially considering the students had Mac devices that aren't the most compatible with STEM software) could access
  - Also used a cloud-based CAD program
- Canvas: "Just learning how to assemble it all on Canvas, that was the big challenge. A lot of time spent doing that."
- Videos created by teachers ("cheesy videos") for teaching
  - But he found pre-vetted videos online because he didn't really have the time to make quality videos
    - The video tool on Canvas isn't great
- It took a long time to teach students the tech tools (like an entire quarter of the school year)
  - Like learning how to use Microsoft tools and the Canvas set up

- He had experience with Canvas/online course set up from a previous school district, but not all teachers did
- Consulted sons (who are in engineering) for tech support
  - Great people to figure out what works and what doesn't work
- Used Teams for video chatting
  - His PC computer from home had a touch screen which was really helpful--he was able to use that to whiteboard virtually
- Wifi at home was installed previously through the Tiger program (fiber installation for northern New Mexico for free)
  - Took a little while to get it installed, but ultimately it was no problem
  - But for some students, wifi was a big issues
- Each student and teacher was given a super old Macbook (like 6 years old)
  - The Macs had been classroom sets
  - Trying to transition to Google stuff
    - Past IT people were Mac people, current ones are Google Chrome people
  - Teachers were also given a document camera
  - He didn't use the tech provided because his computer was newer/better (had a touch screen which is a good for sharing notes)
- Staff development/technology enhancement meetings (where the tech was supposed to be taught) were long, 8 hour, computer based meetings ("vanilla")
  - Needs to be more pointed/more focused; it doesn't need to be an all day event ("It's just brutal"). Needs to be hands on/one-on-one
    - Do a 20 minute presentation, and then send them off to do an activity. Invite them to reach out if they need help, and let them know what you'll check in on them. That gives a much more one-on-one feeling
    - Need to create a conversational environment
  - "I don't know that very many teachers know what the technology can do and what they can do with the technology. I think that's really important."
  - "The implementation of technology really needs to use the same skills that we need to teach under technology. There is a way to do it; and there is a way not to do it. And I saw mostly things that are not the way to do it, when they do it with adults. It's how you roll out this technology that's so critical."
  - Better online education materials are needed!

Tucumcari high school history teacher (and academic challenges)

- "It was really tough"
- "Felt kinda helpless"
- Volunteered to participate in this research because he's "struggled to figure out ways to get them [students] involved"

- “The system we had in place, and we still have in place, a lot of it falls to parents to be sure things get done”
  - Parents figured out over time that their roles have changed in relation to online learning
- Parents would tell him things like “well I’m not the teacher,” but he felt like the role of a parent ‘bringing a child to school’ still existed: “If you [the parent] could just turn on the computer and tell ‘em [the student] ‘You’re here until the end of class,’ you know, to me that was their [the parent’s] role”
- “I’ve probably reached out to parents in the last year and a half more than I ever have, because as they wouldn’t show up, I would send emails, I would make phone calls”
- He’s had parents tell him to quit trying to contact them, “that if their student isn’t doing something, then that is just the way it is”
  - “How do I tackle that? Sometimes I just don’t know if I can.”
- Parent and teacher relationships became stronger (more email communication)
  - “I probably have a better relationship with I would say 20 times the number of parents as I did before COVID. So the relationship between teacher and parent has probably increased tremendously. And luckily most parents see that without them, this process just couldn’t happen because they’re [students] kids.”
- Students wouldn’t always join class--hard to do one on one with big classes (his get as big as 30-some students)
- Hard to get in touch with students
- In hybrid mode, can tell that most students who are still online suffer a lot more than those who are able to be physically in the classroom
  - Can’t get the kids online who don’t want to talk to come out of their shell as easily, because at least in class, it’s easy to have a private conversation to check in, but virtually, it’s usually just a text which is hard to read the inflection of and such
- It was most successful when there was already a strong connection between the teacher and student (more likely to reach out for help)
  - “We actually created a different class we called, ‘Content Mastery.’ So each teacher was assigned a certain number of students to keep an eye on their grades, and once a week we would have meetings with those students. And then of course the students that were struggling we would have more meetings than that, and so then you were able to focus and basically be a teaching coach.”
- “And if I could just get them [students] this close [meaning interacting on Zoom like in the interview] I could actually say, ‘Hey, how ya doing? Everybody okay in your family? Blah blah blah.’ I could get them pulled back in, where they know that I care. Where, when you send them a message like: ‘Hey, this Mr. Evans, I haven’t seen you in a few days, can you check in with me?’ That doesn’t carry as much as me giving them a smile and you know, whatever. That’s the other thing with the masks. It just kills me to teach



with the masks on. They can't see me smile. [He then talks about the ways that he tries to make the school year as fun as possible for students] But if you have a mask on, it's just so hard, you know. It's hard for me to see them. [He then discusses the difficulty of helping students read out loud/figure out facial expressions]"

- Students need more direction than you might assume
- "It's hard to get past that [having so many students drop out]. I'm still working with some of them, through the school but not actually through the school, because I know them, we're such a small community, that I'm still trying to get them to graduate. They don't think it's worth it, I do, and so I'm trying to get them to."
- Grading system has a built in commenting section for teachers to be able to exchange notes like whether they've attempted to reach out to parents, but even that didn't always help form connection with the parents. It did allow for connection between teachers
- School worked together to figure out how to unify the tech
  - In person meetings with all teachers were most useful (though virtual staff meetings did happen for the first bit of the pandemic, and that worked okay)
- As a part of the annual professional development at the beginning of COVID, he decided "that's where instead of becoming a consumer of knowledge, I was like 'part of my professional development is that I want to be a producer' so I could be one of those teachers that would present to others."
  - He records pretty much everything, so that way any student that isn't able to be there synchronously can watch later: "I guess I look at it as trying to be as equitable as possible [...] the technology has helped. I think we're getting better all the time, because as I said, a year, year and a half ago, you know, give or take, a lot of this was unheard of. None of us as teachers came in that year thinking, 'Oh, we better get ready to be ready to teach online,' you know. So then all of a sudden, every teacher did something different.  
And I that's kind of what started things out bad was kids are, you know, creatures of habit. And if one teacher is doing one thing and another one is doing something else, you know, they're gonna struggle. And I think that's where our school did really well. Our leadership team came together, and we as instructors all came together and said, everyone kind of came together and we did this deal where, 'what's working for you?' And when we looked at it, most teachers what was working was pretty close to each other's model, I guess you could say.  
And where people were struggling, it pretty much showed up the same way, that you know, you needed to make sure everything was on time [...] and then of course the recording thing. But then ultimately, this doesn't work without the students knowing how to use their end of the technology. And I think that's where a lot of people didn't realize, they just thought, 'Oh, kids are smart, they already know how to manipulate their phones.'" Well, that's great, it's because they want to manipulate their phones. And I hate to say it, kids are the smartest

people in the world because if they can figure out how to get out of something, they will. [...] So one of the things I would do, me and another teacher, we would put together YouTube videos and we'd pass them around to all the other teachers. [These were also then added to Google Classroom's materials section for students to reference.]”

- His school did a good job of providing tools like computers with cameras for teachers to take home, a standing station with two monitors and touchscreens (allows for interaction with students in classroom and at home)
- “We were in brand new territory. I guess I equated it to like a college student. Whenever I did my masters everything was online. Well, I'm a motivated person paying for my education. There's a big difference between that and a fourteen year old freshman being forced to get on the computer, right. So we started out doing the same thing colleges were doing but with two different people [...] they're young, they're immature, and many times they don't want to be there. So, yeah, sorry, I kind of went off on a rant.”
- HMH Ed (Houghton Mifflin Harcourt Learning Technology) - books online (how do you get books to kids from home?)
- “Getting together with other teachers and the principal to me was the turning point.” (after the first semester of COVID)
- He created “how-to” Youtube videos (“toolbox”) to remind his students how to do things like turn in assignments, etc which were really useful, and he passed them onto other teachers to use too

### Santa Fe high school science teacher

- It was hard for her to tell if parents were involved
  - Assumed that parents would be more involved because they were more likely to be sitting right there with their kid
  - For the first few months (at the middle school she used to teach at, spring 2020) the parents/family members would often sit in on classes
    - Created a different classroom environment: the kids aren't going to be as likely to speak in front of parents/siblings
  - Most messages she got from parents were about technology frustrations
    - Ex. their kid logged into class, but they were marked absent
  - With her admin status, she did/does have more communication with parents during things like IEP meetings
  - Thinks that most parents really do want to be involved
- Older students who had to care for siblings/family members typically asked for extensions to late at night
  - Providing care during the day, and were sleep deprived
- Lots of texting and phone calls

- Teachers were given a phone by the school, but she ended up just using her own because it was more convenient (but that creates some concerns about getting contacted later on)
- Had students that she has never seen their faces
  - Didn't have the bandwidth to have their cameras on
  - Even this year with masks covering their faces: "I'm only seeing half of their face. I can't see when they like go to open their mouth to ask a question. You know so much of communication is hindered. A lot of teachers say that when they go outside, and they see the kid with no mask on, they don't even recognize them. It is so strange."
- Networking is challenging
- Students used chat posts to rant and complain more than complete the actual material
- Basically no connection with other teachers
  - When you do have the chance to talk with them, you're so exhausted and done with being on the computer
- Couldn't mandate cameras being on due to privacy concerns
  - Showing a private space was tricky
  - Didn't have great attendance during class time
    - Would log on, but not actually be present during class time
  - ScreenCastify was a software provided by the school to record class/an overview of the material so that if students missed class, they could still get material
- Issues for teachers without wifi having to teach in their car
  - Concerns of teachers driving to pick up the signal again/having distractions (like their kids) in the background
  - A lot of teachers who had kids in school virtually too had a hard time
- Had to pause on the recording of classes (to archive for others to watch later) for privacy purposes
- Santa Fe Indian School has been providing one-on-one Chromebooks since before the pandemic, but students and teachers still faced tech issues
- ScreenCastify: could record class (but had to be in the classroom to use it)
- Tech support
  - Had a point person who helped, available like all the time/really responsive
    - She had been a tech teacher at the school, but then received admin licensure to help with this position
    - Was great at being responsive and communicative with teachers
    - Would have office hours each week to work one-on-one with teachers (take control of their computers to help out)
  - "Optional" in-service software weekly meetings
    - Lots of hands-on support
- Google Classroom when at home learning started (Google Meets)

- Had to increase security when they found out that students would try to meet together on their class Meet links without a teacher present
- Received document cameras, scanner, Chromebook (didn't really use, but it was nice to see what the students had available to them from the Chromebook)
- Group work was difficult for her to monitor virtually
  - Breakout rooms were not great ("seems like [setting up and navigating breakout rooms is] more trouble than it's worth)
- The tech challenges she ran into forced her to change her teaching methods
  - Moved away from note-heavy, direct instruction, vocabulary memorization style teaching (this sort of matches the changes occurring in science education currently anyways)

*Albuquerque middle school math teacher (and academic contests)*

- "[academic contests are the] fullest way to approach education"
- "Teaching the subject matter really doesn't matter very much"
- "It's the most effort I put in with the least amount of results. I've worked harder in my life; I've had some crazy jobs. I spent a couple years in Africa building schools and drilling water wells. When I was in the navy I was in submarines. You know, we would have 36 hour days sometimes, like, almost all the time. So I'm used to super hard intense stuff, but at least you see the rewards. I've never put in so much effort. The ratio of the input to output is probably the worst thing I've ever experienced in my entire life as far as meaningful results."
- Found ways to gift prizes (swag collected from professional development meetings) to students which would then translate to seeing parents (when they came to pick up the prizes/when he would tell parents about their student's accomplishments)
- Talked to parents more (in person or on the phone)
- Sent weekly parent emails (with essentially grade reports; maybe like 5 parents would reply out of ~125) - a lot of one way emails essentially (not quite the same level of interaction)
- That parent engagement was different than being able to just stop them at pick up or whatever
- Only a few students would show up for one-on-one opportunities (office hours/tutoring); he was able to work with them more (teaching them coding especially) than he would typically ever work with students in a normal year
  - There was not a ton of quality interactions with students
  - "Some kids I wouldn't even know I had them, or 98% of the time they were just a black block with a name on it."
- Another prize he provided as incentive for completing homework on time and accurately was allowing students to pick something to be 3D printed
- Used technology and systems that he'd already used before

- Google Classroom and Canvas were both used, and Powerschool
- IXL, Khan Academy
- There were a lot of platforms for students to track, so he created a hyperlinked step-by-step document for how to use everything
  - Walked all of them through how to use it at the start of the year, and that way they knew where they could turn to
- Collab b/t teachers
  - There were 3 teachers who really knew Canvas who helped teach other teachers and the administration for how to use it
  - “There were several times where we had a whole day canceled for school so teachers worked with other teachers to show them what they needed to get done and how to do things. And again, that was mostly for Canvas and Google Classroom. And then I helped with some of the other teachers doing IXL. They have a pretty good diagnostic program for both the math and the language arts, so that was something I helped with with some other teachers.”
- All students got devices if they needed them
  - Middle schoolers got Chromebooks, high schoolers got laptops (by fall 2020)
    - A survey had been sent out the previous spring to get a feel for who didn’t already have personal devices, so that they could more smoothly deal with issuing the devices in the fall
  - Some students who needed wifi support got hotspots
- Concern is whether people will actually use the tech
  - Has stories of visiting students’ homes, and seeing so many storing tech up on shelves (like saved VHS tapes that seemingly have no use)
- Wasn’t able to do any of the normal academic contests that he usually does
  - Really likes to find ways to engage students in even non-STEM contests and bring in some math (ex. Photography contest he might incorporate something about shutter speed or the rule of thirds)
  - Has spoken to a lot of former students who have done academic contests with him, and they really attribute a lot of their successes in life to these contests
- “A lot of people don’t want to learn stuff just to learn it. I could see if it gets implemented in a way that’s engaging, but...”
- He was the one who gave Ferdi the actual cookbook idea (have people exchange actual recipes to then draw them more into the project/use the technology for education)
  - Engagement is key

*Rio Rancho middle school science teacher*

- “It was a nightmare, it was horrible [...] It was the worst [...] It was just hard”
- “We had Friday’s off last year, and even with Fridays off, we were always dead. I mean the kids were dead tired, I was dead tired.”

- “Even if they’re right there in front of me, I still can’t see their faces.”
- “I think the fact that they’re back is an amazing thing. The fact that we don't have to rely on technology. I mean if I wanted to teach with a book and not even use the document camera, not even use the project, I could. It’s easier if they’re here. I could give them a piece of paper and they could fill it out and give it back to me. Whereas everything else is online. I like the fact that we could be without technology if we had to be.”
- Met more parents virtually (more came to parent/teacher conferences than usual)
  - Able to meet the parents more often
  - Conferences: typically out of ~110 students, he’ll meet 35 parents; this year, he met with 58
    - More convenient/accessible for parents’ scheduling--it does take more time for the teacher though
- As a parent, the communication with his older students’ teachers was great: “The teachers called us often. They would actually physically call us and talk to us and make sure everything was fine.”
- He, and a lot of his co-workers, had kids at home too. The youngest kids were really hard--they needed a lot of help
- Hybrid teaching was really hard
  - Takes a lot of energy to focus on the remote students when there are students in the classroom
- The kids and teachers were not allowed to move from their spots when they first returned in February 2021, and that made behavioral management difficult
- After spring 2020, students really wanted to be online
- Being able to see faces virtually, but masks create a barrier in person: “Even if they’re right there in front of me, I still can’t see their faces.”
- Being able to see the kids in their home environment was strange at first, but then he started to realize that those who joined the calls actually wanted to be there, and that was really great
  - This is in comparison to spring of 2020 when their school didn’t really do the online thing well--the teachers were just sending home weekly assignments and not seeing them virtually at all
  - Hosted a lunch meeting for students so they could eat lunch together virtually (did that all of the 2020-2021 school year)
- Pretty tech savvy school since 2014
  - Every student in 6-8 was required to have purchased a Chromebook, so easy transition into remote/virtual learning (especially for him, because he had already incorporated a lot of tech into his teaching--other teachers maybe not as much)
    - But for the most part, everyone did fine. It was really the teachers that don’t like technology that had the hardest time
  - Used Google Classroom already

- He's always used lots of online sources: BrainPop, Quizlet/other vocab testing tools, etc.
- Helped other teachers with their tech, even going to their homes to help them get set up
  - "I'm a tech person, so I actually talked to the other teachers to help them with their problems. But that was always working on Zoom or Google Meet or Google Classroom or any of those things. That's why I knew about all their problems. So like I would actually go to their houses and help set up their computers or things like that. But I never got to talk to the teachers I teach with."
  - Didn't really meet with team teachers though
    - Even when they were in the building together in fall 2020, because he was just focused on being in his Google Meets all morning, and then they would go home at lunch time (to switch off with other parent or whatever)
- "The school provided cameras [in classrooms] since 2014, and Chromebooks and projectors. So we all have projectors in the room, we all have cameras, we all have Chromebooks. Unfortunately, the Chromebooks we have are the ones from 2014. So they're not supported really, but they work. Most of them work. Some don't have Google Meet; they just don't have the right software. But for the most part, I'm surprised that the teachers are able to use their what I guess is now their 8 year old Chromebook and still teach a class. We still have struggles with it, but most of the times it works."
  - For students that didn't already have their own device, they were required by the school to purchase a Chromebook. And he, as a teacher, would go to student's homes to help them get set up

## Consent Statement

In order to ensure that every participant interviewing with me understood what they were consenting to, I had them sign a consent form detailing what they were agreeing to participate in. I also explained these points to them verbally, as outlined below. I started each interview by asking if they had read the consent form I had emailed ahead of time and then introduced the project as written below. I recommend similar steps be taken by the DART team students who continue my research.

## *Informed Consent Agreement for Participation in a Research Study*

**Investigator:** Grace Rydout

**Contact Information:** [sf21.connecting@gmail.com](mailto:sf21.connecting@gmail.com)

**Title of Research Study:** "Digital Sovereignty: Connecting New Mexico"

**Sponsor:** Ferdi Serim

### **Introduction:**

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

### **Purpose of the study:**

The purpose of this interview is to understand how technology can be better introduced and integrated into spaces through collaborative community work.

### **Procedures to be followed:**

This semi-structured interview will ask you to reflect on your experiences with education and technology, connection, and community, particularly in relation to the last 18 months of the COVID-19 pandemic. It is expected to last 30-45 minutes. It will be recorded through a voice recording app, and identifying features including age and relation to other research participants may be recorded as well.

### **Risks to study participants:**



The questions to be asked in this interview may reintroduce trauma that occurred due to harmful experiences related to the COVID-19 pandemic, particularly related to education, technology, and socializing.

**Record keeping and confidentiality:**

Audio recordings, transcriptions, and notes of this interview will be accessible to the investigator and WPI project advisor Zoe Eddy. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee, and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you.

**Compensation or treatment in the event of injury:**

You do not give up any of your legal rights by signing this statement.

**For more information about this research or about the rights of research participants, or in case of research-related injury, contact:**

Investigator (Grace Rydout, Email: sf21.connecting@gmail.com), WPI Project Advisor (Zoe Eddy, Email: zeddy@wpi.edu), IRB Manager (Ruth McKeogh, Tel. 508 831- 6699, Email: irb@wpi.edu), Human Protection Administrator (Gabriel Johnson, Tel. 508-831-4989, Email: gjohnson@wpi.edu).

**Your participation in this research is voluntary.**

Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

**By signing below,** you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

\_\_\_\_\_ Date: \_\_\_\_\_  
Study Participant Signature (or if under 18, Signature of Parent/Guardian)

\_\_\_\_\_  
Study Participant Name (please print)  
(or if under 18, Name of Parent/Guardian)

\_\_\_\_\_ Date: \_\_\_\_\_  
Signature of Person who explained this study

Adult participant

(school faculty, parent/guardian of a student without student present, NMPED employee)

“Hi, my name is Grace Rydout, and I am a junior at Worcester Polytechnic Institute studying Mechanical Engineering. I am working on a research project with my WPI advisor, Zoe Eddy, and project sponsor, Ferdi Serim, to try to understand how technology can be best introduced and integrated into spaces through collaborative community work. I’d like to get an understanding of how the COVID-19 pandemic has shaped your experiences in relation to education, and also what role technology played in that. From my research, I plan on creating recommendations to give to Ferdi to help him successfully implement the datacasting technology his project is focusing on. This interview should be about 30-45 minutes long.

Understanding that discussing the COVID-19 pandemic can be difficult or uncomfortable for many, I want you to know that participating in this research is completely voluntary. You may stop at any point or ask me to skip any questions. The questions I will be asking are purposely open-ended, and you may share as much or as little as you feel comfortable with.

I also will be keeping any information I collect from you anonymous. I would like to ask your permission to audio record today’s interview. The only people who may have access to the recording, transcription, and notes of this interview include my advisor, Zoe Eddy, my sponsor, Ferdi Serim, and me. I will not attach anything you tell me to your name or other identifying features besides potentially your school district and relation to other research participants. Any publication or presentation of the data will not identify you. The consent form outlines everything I just said.”

Participant under the age of 18

(Any minor will be interviewed with an adult parent/guardian present. They will be no younger than 5 years old. Again, all interviews will be held in a private environment the participant is comfortable in)

“Hi, my name is Grace Rydout, and I am a junior at Worcester Polytechnic Institute studying Mechanical Engineering. I am working on a research project with my WPI advisor, Zoe Eddy, and project sponsor, Ferdi Serim, to try to understand how technology can be best introduced and integrated into spaces through collaborative community work. I’d like to get an understanding of how the COVID-19 pandemic has shaped your experiences in relation to education, and also what role technology played in that. From my research, I plan on creating recommendations to give to Ferdi to help him successfully implement the datacasting technology his project is focusing on. This interview should be about 30-45 minutes long.

In order to interview with a minor, an adult needs to be present at all times. The adult needs to not only consent to their own participation, but also for the participation of their child. I want today's interview to be an open discussion with both the adults and youth, so everything I say from now on applies to anyone who is comfortable participating.

Understanding that discussing the COVID-19 pandemic can be difficult or uncomfortable for many, I want you to know that participating in this research is completely voluntary. You may stop at any point or ask me to skip any questions. The questions I will be asking are purposely open-ended, and you may share as much or as little as you feel comfortable with.

I also will be keeping any information I collect from you anonymous. I would like to ask your permission to audio record today's interview. The only people who may have access to the recording, transcription, and notes of this interview include my advisor, Zoe Eddy, and me. I will not attach anything you tell me to your name or other identifying teachers besides potentially your school district and relation to other research participants. Any publication or presentation of the data will not identify you. The consent form, which needs to be signed by the adult consenting for the minor, outlines everything I just said."

### Explaining My Project

Serim, Edington, and Einhorn all reached out to contacts on my behalf to help me set up interviews. Below is the blurb I gave them to send to these people as a concise way to explain my project, and it included my contact information. I recommend a similar statement be written up by the DART team students who continue my research.

#### *Short blurb to send to potential interviewees (used by Creighton, Celia, and Ferdi)*

My name is Grace Rydout, and I am a junior at Worcester Polytechnic Institute working on an ethnographic research project to provide recommendations to the Public Education Department regarding a technology implementation project. I am looking to interview school faculty (teachers, IT directors, and principals especially) and families about their experiences in education during the past 18 months, specifically relating to technology and connection with community. The interview should take 30-45 minutes at most. If you are interested or have any questions, please email [sf21.connecting@gmail.com](mailto:sf21.connecting@gmail.com). Thanks!

I also created some email templates for myself to ensure all the information I wanted to include in communication with potential interviews be shared.

#### *Email to send to contacts given to me*

Dear ,

My name is Grace Rydout, and I am a junior at Worcester Polytechnic Institute working on an ethnographic research project to provide recommendations to the Public Education Department regarding a technology implementation project. \*\*\* gave me your contact information, as they said you might be interested in interviewing with me. I am looking to interview school faculty (teachers, IT directors, and principals especially) and families about their experiences in education during the past 18 months, specifically relating to technology and connection with community.

The interview should be 30-45 minutes at most. I've attached the Informed Consent Agreement form to this email for your review. You should note that this interview is completely voluntary, and any publication or presentation of the data will not identify you.

Please let me know if you are interested in setting up an interview, or if you have any questions or concerns!

Thanks,  
Grace Rydout

*Email to send to contacts that reach out to me*

Dear ,

Thanks so much for reaching out! The interview should be 30-45 minutes at most. I've attached the Informed Consent Agreement form to this email for your review. You should note that this interview is completely voluntary, and any publication or presentation of the data will not identify you.

Would \*\*\* work for you?

Thanks,  
Grace Rydout