Increasing Educational Wellness in Underserved Communities in Santa Fe

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Abstract

The Yazzie/Martinez vs State of New Mexico (2018) lawsuit showed that the New Mexico education system did not fully support its students' success. Due to the decision, the government placed an emphasis on using community resources to supplement learning. Our project was to find what personal character traits led to a student's success and what community resources help instill these values. After finding both, we made a website so that community members could learn about these resources, including a budget calculator and several sorting orders for accessibility. We found that three key aspects of a resource lead to students' success: cost accessibility, long term support, and personal engagement. As a result, we recommend that community resources focus on these aspects.

Executive Summary

In communities all over New Mexico, underfunded and overworked public schools continue to be unable to prepare their students for employment. With our project, we uncovered resources that communities can use to improve themselves by developing both educational and personal skills. We then created a website to share these resources with community members, so the next generation could have better opportunities.

Many underserved communities have a long and tumultuous history with traditional western education. When public schooling came to New Mexico in 1898, funding to those schools was minimal (Bradley, 2021). Underfunding has continued into the modern day. The budgets for schools in this area are so low due to one particular factor: New Mexico, as a whole, is very poor. It has one of the lowest incomes per capita out of any state (Beck, W. A. & McNamee, G. L., 2010, Moskowitz, R., 2021). New Mexico has been ranked the worst state in education for 4 years in a row by the Annie E. Casey Foundation. It has the second lowest literacy rates in the US, and it has lower than average graduation rates in both high school and college as well.

In order to help our sponsor improve educational wellness in Santa Fe, we began by developing two key data sets. First, we found a set of educational resources within Santa Fe by talking with local residents and doing online research. Second, we compiled a set of characteristics that determined a person's success in the workforce and adulthood. We interviewed several educational professionals, including Dr. David Goldberg, Dr. Shelly Gruenig, and Dr. Jason Ravitz to find these characteristics. Both of these data sets represent the basis of our knowledge and analysis.

The resources we found roughly fit into four groups: Community Centers, Libraries/Museums, Sports/Clubs, and Online Resources.

1. Community Centers are essentially spaces for people to find their own recreational activities. They provide space for programs and planned activities.
2. Libraries and Museums have some programs for locals and children. However, they are similar to Community Centers because most of their use comes from visitors interacting with the resource on their own terms.
3. Sports and Clubs purposely formed the greatest percent of resources we found for analysis. They are long term programs designed to get participants engaged in their activities.
4. Online Resources trade hands-on interaction for accessibility. If the internet is available to a potential user, online resources are highly accessible and widely cost friendly. However, getting the internet and a device to access it is not a practical option for many people within underserved communities.

We analyzed these resources by observing how well each resource reinforced the key characteristics we found. We organized the characteristics based on their importance, which was determined based on our interviews. We used various cues across the interviews including repetition, stated importance, and other metrics to rank their importance appropriately. These characteristics have been listed on levels from least important to most important:

1. Exposure to Technology: This trait is important for making career decisions to go into STEM fields, but is not extremely important to have in every educational resource.
2. Math, English, and Social Skills: We found that these traits usually come much easier to those who have developed many of the other traits. Moreover, most careers only require an advanced understanding of 7th grade Math and English.
3. Critical Thinking and Curiosity: Curiosity is essential for a person to create new ideas, and it also increases the desire to figure out a problem. Critical thinking is essential to get people fully engaged in a topic and use problem solving.
4. Collaboration, Peer Mentoring, and Persistence: We found that one of the best ways to develop knowledge is to discuss it and be able to teach it. This interaction and engagement is key for long term development. Persistence allows a person to branch out and find ways to get through the tenuous parts of life and a job.
5. Leadership, Self-Confidence, and Self-Efficacy: These traits denote the pinnacle of personal growth. While having one of these traits does not make a person destined for success, a healthy balance of all three traits can guide any person to a better life. Self-Confidence allows one to believe in oneself, Self-Efficacy gets people to believe that they can do a given task. Leadership means showing others how to do tasks and helping others get self confidence.
6. Cost: The most important factor we determined was cost accessibility. In order for a resource to be useful, the resource must be available and affordable to the community.

We found that three main traits of resources allowed them to develop many of these characteristics in their participants. In order, the traits are cost accessibility, engagement, and long-term support.

Cost is paramount to usability of a resource. An accessible resource that only teaches the least important characteristics is still much more valuable to a community than a resource that is the pinnacle of learning but is completely unavailable to those who need it.

Engagement is also a core trait of resources that we found to be successful. Critical thinking, curiosity, collaboration, peer mentoring, and leadership can be all defined as different types of engagement. People being engaged with a resource is integral for influencing them in positive ways.

The final pillar of our recommendations is long-term support. According to interviews with education professionals, people very rarely improve in one day of classes or activities. For positive development, it is important for people to receive consistent long-term support from peers and/or people of authority. This long-term support creates a crucial environment for growth.

Our next step was to synthesize both the resources and characteristics we found into a helpful resource for the community. We evaluated the resources by grading and scoring them based on how well they fostered and enforced the characteristics we found. We then took this score and weighed it by how accessible the cost of the resource was. This weighted score was the final score for each resource. See Figure 1 for the Grading Equation.
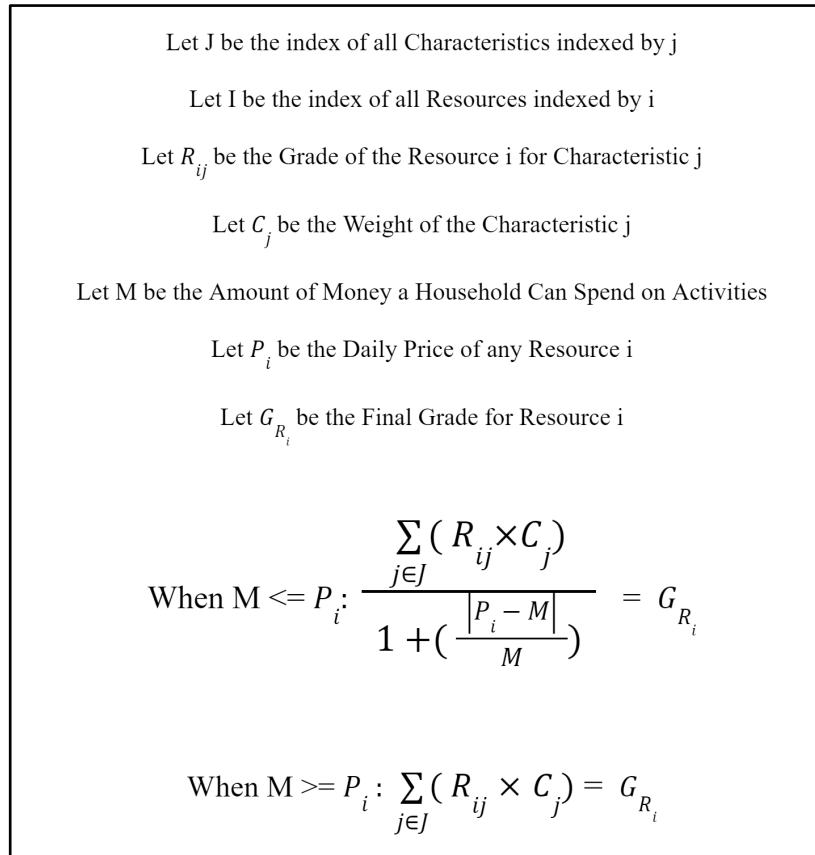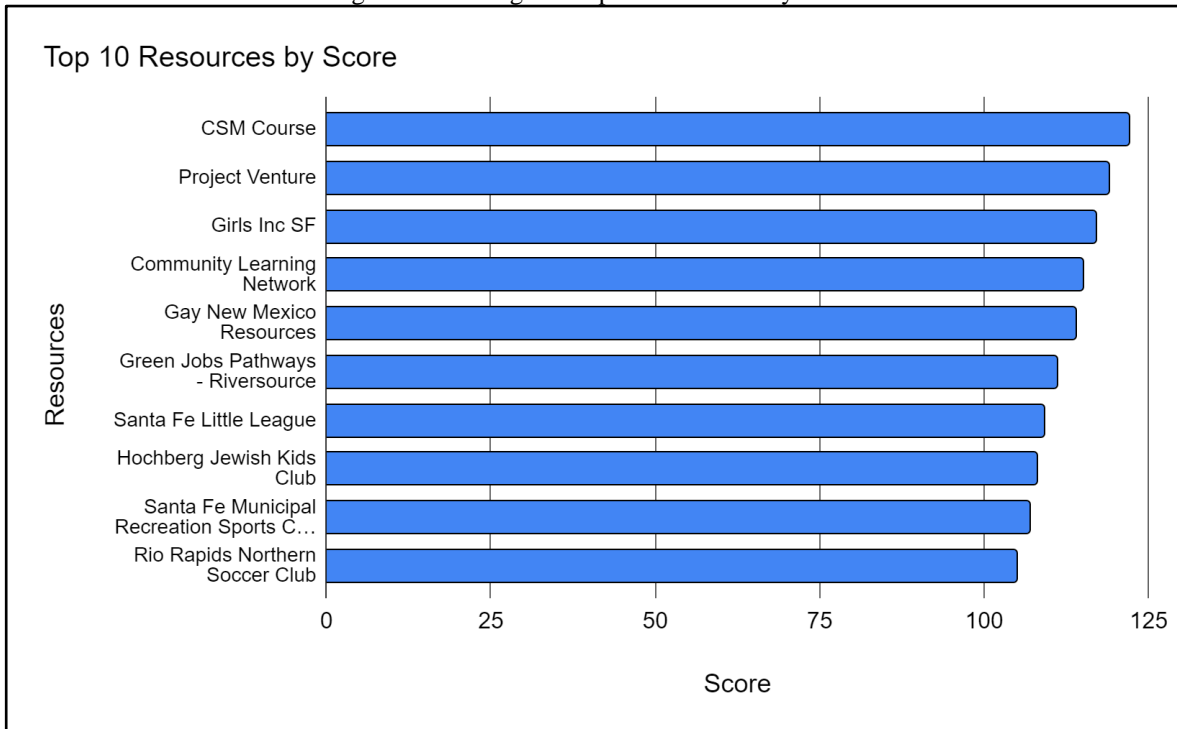
Figure 1: Grading Equation

Let J be the index of all Characteristics indexed by j

Let I be the index of all Resources indexed by i

Let R_{ij} be the Grade of the Resource i for Characteristic j

Let C_j be the Weight of the Characteristic j

Let M be the Amount of Money a Household Can Spend on Activities

Let P_i be the Daily Price of any Resource i

Let G_{R_i} be the Final Grade for Resource i

$$\text{When M} <= P_i: \quad \frac{\sum\limits_{j\in J}(R_{ij}\times C_j)}{1+\left(\dfrac{|P_i - M|}{M}\right)} = G_{R_i}$$

$$\text{When M} >= P_i: \quad \sum\limits_{j\in J}(R_{ij}\times C_j) = G_{R_i}$$

Figure 2: Ranking the Top 10 Resources by Score


Top 10 Resources by Score

This evaluation created a list of resources that could be ranked by what score they achieved. A list of the best resources by their score is shown above. Figure 2 represents accessible resources that teach several of our characteristics at a high level.

With the resources ranked, the only key objective that we had left to accomplish was to share the information. We had many ideas for how to bring this information to the community, but in the end we decided to build a website. We acknowledge that there are problems to building a website meant to help a demographic that does not widely have internet access. However, we found that many communication methods were outside of the timeframe and the budget of this project. We hope that by making a website, people will be able to access it through widely known resources that can supply a free internet connection, such as a library.

The website that we made has several key features to help people find resources that fit them. Firstly, we made a sortable table where people can insert their daily discretionary budget and get a personalized "advising score" for each resource. The same table also contains some facts about what age group and demographic each resource serves. Secondly, we made an interactive map of local resources so people could find which resources are closest to them. Finally, we added a summary of each resource at the bottom of the website to help users with initial research. The website is meant to bring together all the research and insight we have developed throughout the project into one place.

Figure 3: Main Website Interface
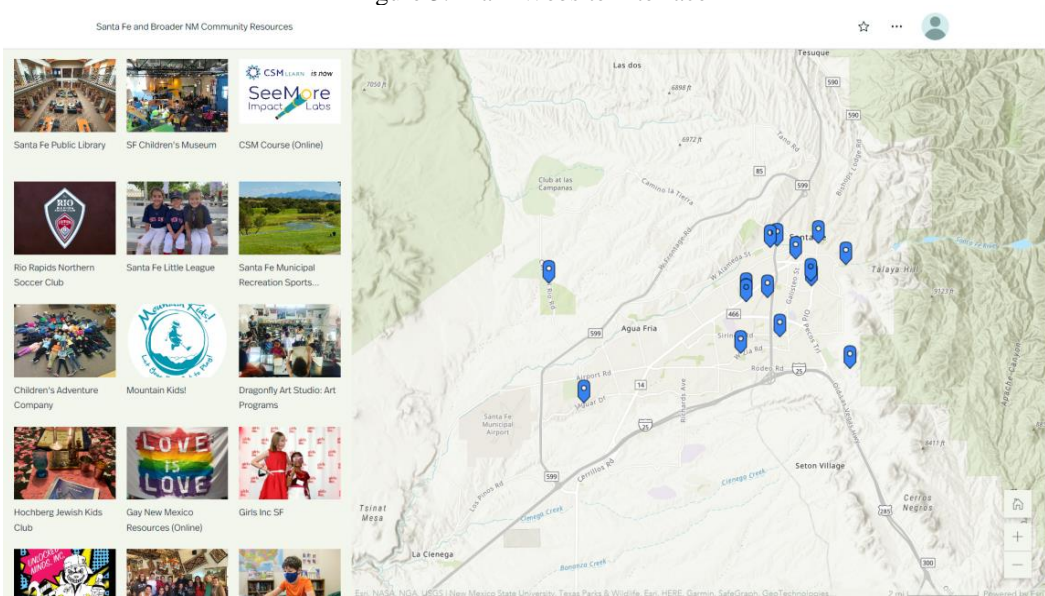
With our project, we found local, accessible resources and displayed them in the most accessible fashion we could manage. We hope that as the project evolves in the future, we will see future teams from WPI and NextReady further develop upon our analysis and discovery. We also hope to see the story map used by members of the community in order to better their lives. However, this would rely on future groups advertising and spreading the website in a capacity that we have not been capable of. Overall, for such a complex, wide-spread issue, we have taken steps in the right direction. We recommend that future groups expand on what we found to further help the community.

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Introduction

New Mexico's education system has been competing for last in the nation for several years (Kids Count Data Books, 2017, 2018, 2019, 2020). Problems have existed for long enough that there are sayings in New Mexico like "Thank God for Mississippi," referencing that the state is only second last due to Mississippi being worse (Key, V. O., 1949, Gessing, 2022). New Mexico's problems with education reached a critical point with the Yazzie/Martinez vs. New Mexico lawsuit, which concluded in 2018 with a court order to allocate more funds to education (NM Center on Law and Poverty, n.d.). In the wake of the lawsuit, many independent contractors were hired to improve education outcomes, including our sponsor, NextReady. NextReady believes that the best way to improve upon the current system is to promote accessible community resources (Claro Consulting, LLC, 2018).

The team assisted NextReady by determining what resources outside of the classroom helped communities the most. The team's primary goals were to increase educational wellness in local communities by identifying resources that lead to success and create a platform to share them with the wider community. In order to accomplish this goal, we worked with NextReady to determine character traits that led students to success. To do so, the team interviewed educational professionals about how they educate students and how they have helped students to be successful. Finally, we determined the best way to share this information with the wider community in order to assist them in furthering their education.

In this paper, we begin by outlining background information about the history of New Mexico's education and its modern effects, alternatives to public education, and story mapping. We then continue by sharing information on how we conducted our research and our findings.

Background

New Mexico's Shortcomings in Educational Wellness

New Mexico is consistently at the bottom of nearly every educational statistic (NAEP State Profiles, n.d.). The reason for this lies partially in the troubled history of the education system (Northern Plains Reservation Aid, n.d.). New Mexico became a United States territory in 1850. At that time, the Catholic church was the main provider of educational services. Disputing religious beliefs discouraged many non-Catholic residents from receiving a church-sponsored education (Martinez, 2022). The problems lasted for decades and created two groups separated by a cultural rift in educational success: Catholics, who accepted an education from the church, and Native American populations, who wished to retain their traditional culture (Martinez, 2022). As time went on, the rift widened, leading the government and Catholic church to attempt to force native populations into both education and the "American Way of Life" through Indian boarding schools. Despite New Mexico education being taken over by the government in 1898, the distrust caused by the horrors of Indian boarding schools persisted for many years. The effects of this history are still felt today.

One of the main reasons New Mexico's current education system underperforms is because the state struggles with funding in comparison to the rest of the United States. The national average for yearly educational spending per state is approximately 13.4 billion dollars, while New Mexico only spends 3.5 billion dollars. This is further shown by the fact that the national average is $13,500 per student per year versus the $11,300 that New Mexico spends (Census, 2020). These values show that New Mexico spends less on education than many other states, which could be a contributing factor to the below average quality of student education.

New Mexico was ranked 50th in the nation in education by the Annie E. Casey Foundation for four years in a row (Kids Count Data Books, 2017, 2018, 2019, 2020). Due to decades of neglect, the underfunding has created a schooling system that is not up to the national standard. In the Yazzie/Martinez vs. State of New Mexico (2018) case, it was concluded that New Mexico was not providing sufficient funds to education and that the state needed to find a way to give more to education (NM Center on Law and Poverty, n.d.). This goes to show that the funding problems are causing a decrease in education for New Mexico's residents, resulting in a loss of overall educational wellness.

The wellbeing of an entire community can be measured in several ways. Some clear problems affecting communities in New Mexico are unemployment and poverty. New Mexico's unemployment rate is 4.5%, which is well above the national average of 3.7%. New Mexico also has one the highest poverty rates of any state, with over 18% of the total population below the poverty line (Nathanson, 2021).

Most people in New Mexico do not have a post high school degree and some do not even have a basic education. About 74% of students graduate on time from high school (New Mexico | Graduation, n.d.) and only about 41% total graduate from college (Mamedov, Pawlowski, 2019). Unfortunately, 29% of adults in New Mexico only read at the level of a 5-7- year- old (Nathanson, 2021). However, education and literacy rates are only one piece in a larger picture of community health and wellbeing.

Alternatives to the Public Education System

There have been resources outside of the education system to support students since before public schools existed, such as recreational camps, sports, and other local programs. We

define alternative education methods as resources available to the community outside of formal public education that are beneficial to the education of the student or user. These resources often augment the learning provided by traditional schooling and allow students to learn a different set of skills. While public schools teach math and English skills, community resources provide softer skills that complement that curriculum. Therefore, alternative education methods also complement the education one gets from formal schooling (Pais et al., 2014).

These resources teach people lessons outside of the scope of traditional curriculum. If community resources cover similar topics to traditional curriculum, they reinforce the subject in a different way (Pais et al., 2014). A classic example of a community resource that helps children to learn new skills is a team sport. For example, in soccer, one can learn communication, critical thinking, perseverance, and confidence. Children also gain a sense of community within the fellowship of the team, making friends along the way (Ruelas, 2020). Other alternative education methods, like libraries and clubs, provide a similar sense of community, but teach different skills.

Sharing Resources with the Community

One of the biggest hurdles in connecting residents with the appropriate community resources is outreach. Story mapping is an effective way to show the residents what resources are available in their area. Story mapping is a service offered by ArcGIS that allows users to easily create websites. The main benefit StoryMaps have over other website building applications is the ease of including maps (ArcGIS StoryMaps, n.d.). However, story mapping can also be used to create a unique media delivery method in which information is attached directly to a map. Readers are then free to browse at their own pace, in their own order. This gives the reader a way to discover the content that they are interested in without being held back by information that they choose to skip.

Story mapping's system also helps readers to understand relative locations better than traditional media. Given that the story mapping system is predicated on tying information to exact locations, it is easy for readers to understand how they fit into the map. This property makes story mapping an excellent way to deliver on their plans for success.

NextReady's Plan for Success

The team worked with our sponsor, NextReady, to determine character traits that have helped community members to be successful in education and future jobs and share their methods with the rest of the community. NextReady is partially led by Ferdi Serim, our main contact within the organization and a serial philanthropist. Mr. Serim has been working to make changes in Santa Fe as a Digital Learning Innovator for upwards of 11 years (Ferdi Serim, n.d.). With his insights, NextReady has created multiple projects, including "Youth Media" and "Entrepreneurship and Technology for the New Economy," that intend to help many different disenfranchised groups (Claro Consulting, LLC, 2018).

Method/Findings

Our overall goal was to increase educational wellness in the Santa Fe community by identifying resources that led to success and then creating a platform to share the information to the wider community. To achieve this, we created the following objectives to guide our research process:

1. Identify community resources that have helped students achieve success.
2. Determine what characteristics community members and educators believe support educational success.
3. Evaluate the data gathered to determine which resources provided the greatest benefits to the greatest population.
4. Determine the best way to share the list of resources with the broader community.

In the following sections, we discuss what actions we took to complete each objective and what we learned from each in order. We begin by discussing how we found community resources, then what types of resources we found. We then progress into how we found characteristics to support, and again what we found. Our next points discuss the evaluation of the resources we found based on the previous point. Lastly, we close by discussing how we determined our sharing platform and what our results look like.

Objective 1: Identify Community Resources

To begin, we needed to find resources to form the basis of our knowledge of what is available to the community. We gathered information by conducting interviews and through participant observation. We found more by searching for community educational centers, programs, and events on the internet using Google and a database called ShareNM. This research provided us with a list of resources within the community that could benefit overall wellness. We organized interviews with a variety of people within the community, including families, educational professionals, and business people. We interviewed individuals with a variety of experiences and backgrounds as we believed that different perspectives were helpful to show the widespread effects of the education system on the community as a whole. In particular, we interviewed a variety of educational professionals, including Dr. Shelly Gruenig, the founder of Be Greater Than Average, Dr. Jason Ravitz, an educational researcher, Dr. David Goldberg, a co-founder of the Core Skills Mastery course, the director of education at a local museum, and Jenny, a homeschooling mom. All questions we asked in interviews are provided in appendices B-H.

Interviewing educators and educational staff helped us to understand several aspects of the educational system: how students learn, what they are learning, and the problems facing educators. This helped us identify more areas of improvement for the educational system and to understand what qualities a better system should include. We also met with business people to get their perspective about how the educational system is affecting whom they employ.

We gathered information by using participant observation. We observed activities and patrons in libraries, museums, and other places of learning in the community. Through interviews, we learned how various clubs, museums, and other programs were conducted. However, we also wanted to see the activities for ourselves, and participating in events allowed us to do this. Immersing ourselves within New Mexico's educational resources helped us to see

problems in the education system and some solutions that could help improve educational outcomes.

Our sponsor, Ferdi Serim, provided several resources to research. Using Mr. Serim's recommendations and online databases we found many educational resources. Specifically, we used Google and ShareNM.org to expand our knowledge on different resources. Using Google, we looked up programs, clubs, and events within Santa Fe. On ShareNM.org we used the resource directory, filtered the location to Santa Fe, and then used different categories, including education, basic needs, and individual and family lives to find more resources within the community.

We began by finding resources because we wanted to find out more about education, community centers, and what resources community members engage with in Santa Fe. By researching educational resources, we learned what educational programs in the city were available to the public. We utilized this knowledge later to analyze how beneficial each resource is to the community (see Objective 3 for more information).

Results: Categories of Supportive Resources Found within the Community

We found multiple sets of resources within the Santa Fe community that could help to improve educational outcomes, including community centers, libraries, museums, sports, clubs, and online sources. Due to the vast amount of resources, we believed that it was important to quickly review what each generally does before going any further. Each of these categories support community members in a variety of ways, such as building confidence and persistence.

Community Centers

According to the Collins dictionary, a community center "…is a place that is specially provided for the people, groups, and organizations in a particular area, where they can go in order to meet one another and do things" (HarperCollins, n.d.). Community centers provide a space for social, recreational, and educational activities to take place. Some community centers that we found were the Fort Marcy Recreation Complex and the Genoveva Chavez Community Center. Jenny, a homeschooling parent that we interviewed, also stated that they have engaged in pickleball through the Manzano Mesa Community Center. Overall, community centers are a great resource that can help the community come together through the programs and activities they offer. The importance of such programs came to light in a conversation with the director of education for a local museum, as she talked about difficulties in obtaining families' support for their children's education. She went on to talk about the primary cause of the problem: many parents are either physically or emotionally unavailable. The idea of support came up in a lot of interviews, showing that support can greatly affect a child's learning and that providing support should be an important part of any program.

Libraries and Museums

We found that libraries and museums have many events and programs. The Santa Fe library system has various events for children, including Blanket Fort Storytimes, Youth Chess Club, Wags and Words, and After School Art. Wags and Words provides students a place they can go after school and practice their reading skills by reading to a dog. This encourages students to want to practice reading, since they get to interact with furry friends. All of these programs are free and open to the public. We also found that museums have a similar variety of programs. The

Santa Fe Children's Museum in particular has Seeds and Sprouts, Making Music, and Science Saturday. The Science Saturday program at the museum introduces students to science by allowing them to conduct experiments and work on projects. This program provides a hands-on learning environment, very different from the standard school model. These events and programs are normally held at times that do not conflict with school and when many working parents can bring their children, which makes them very accessible. Both library and museum programs provide an educational and community-based environment, creating a place where families can go and learn outside of school.

Sports and Clubs

While we were looking for any and all programs, events, and activities, two similar subsets emerged: sports programs and club activities, the difference between the two being that sports programs are a type of club in which the primary club activity is a sport, while a club can be based on any activity. While the types of resources discussed previously focused on education and learning, sports and clubs provide a greater focus on soft skills like teamwork and leadership. We found several sports programs, including the Santa Fe Little League and the Rio Rapids Northern Soccer Club. Some of the clubs we discovered were the Hochberg Jewish Kids Club, Mountain Kids, and Girls Inc. of Santa Fe. In our experience, sports and clubs provide a way for people to learn how to work as a team, learn leadership skills, and create a way for people to feel confident in themselves and gain a sense of belonging. We all were in sports as children and found that our teamwork and leadership skills were improved by our time in sports.

Online Sources

The final set of resources we found were online, including the Core Skills Mastery (CSM) course, Gay New Mexico Resources, and the Community Learning Network website. Mr. Serim recommended the CSM course to us. It took around 25 hours for us to complete, and it went over many practical math and literacy skills. See appendix J for condensed notes on the course. It was accompanied by a sister course on career skills intended to increase a student's employability. The CSM course creates a way for individuals to learn at their own pace and to get a different point of view on solutions. It also provides ways to enhance people's learning by explaining why something is wrong, which is helpful and lets people know how they could improve. Upon completing the course, the participant receives a certificate. The certificate counts as 3 semester hours at certain colleges. Certain employers also accept the certificate as an equivalent to a General Education Development (GED) degree.

Overall, we found a large number of resources, too many to be useful in any kind of analysis at that point. We needed to find a way to narrow down the pool of resources to a smaller subset, which would allow us to perform a more complex analysis of each.

Objective 2: Determine Characteristics that Support Educational Success

The main purpose of this step was to provide us with a solid way to narrow down the resources. We decided to do this by finding a number of characteristics that support educational success, enabling us to use these in our analysis later on. In order to determine what qualities led to an individual being successful, we interviewed members of the community who had a background in education. We interviewed primarily educational professionals, however several other members of the community were also interviewed, such as a member of the Santa Fe Rotary Club. As stated in the prior section, we took both the CSM and career skills courses. We

used these courses to deepen our understanding of the characteristics discussed in our interviews. This also allowed us to have more in depth conversations with the interviewees allowing for more dynamic and beneficial interviews.

The education professionals that we spoke with consisted of the director of education at a local museum, Dr. David Goldberg, and Dr. Shelly Gruenig. When speaking with these professionals, we asked various questions about what qualities they would like to see people gain by participating in their programs (see Appendices B, C, E for more information on interview questions). This assisted us in seeing what characteristics lead to success.

We also interviewed Dr. Jason Ravitz, who is an education researcher who focuses on project based learning. His insight into the benefit of project-based learning helped us to identify characteristics that help children succeed. This also allowed us to see what resources we could use to continue our research.

The final person that we interviewed is a member of the Santa Fe Rotary Club. We spoke with him to determine what traits he considers beneficial to the community, because the Rotary Club focuses on assisting the community. This helped us to ground our research in Santa Fe and focus on issues that affect the area.

Results: Characteristics of Success

When conducting interviews, eleven characteristics emerged as critical characteristics of supportive resources. Removing cost, the ten remaining characteristics were sorted into levels based on how much they were emphasized by the education professionals, with level five being the most important. We determined the levels based on a variety of factors. We took the following into account: stated importance, time spent talking about a subject, enthusiasm, and the recurrence of the topic across interviews. In several cases, interviewees gave us their own characteristic rankings.

Table 1: Characteristics and their weightings

Level	Characteristics
1	Exposure to Technology
2	Math and English Skills, Social Skills
3	Critical Thinking, Curiosity
4	Collaboration and Peer Mentoring, Persistence
5	Leadership, Self-Confidence, Self-Efficacy

On the first level is exposure to technology. Dr. Jason Ravitz introduced us to this idea. He found it important that community members have an exposure to technology, stating "...in tech especially, this exposure factor is so crucial. And just the opportunity to have access to begin to learn this stuff and to have someone say, 'Y'know, you'd be good at this', 'You might be interested in this.'" Dr. Shelly Gruenig echoed the same sentiment, stating "...[exposure] make[s] a real difference in being able to make a decision and plan for the future." Exposure to technology is important for students to understand their interests and decide their own future. It

does not solely determine if they succeed in life. Due to this reasoning, we decided to put exposure to technology on the first level.

On the second level are math and English skills. While these skills are important to everyday life, learning them will not prepare a student for everything that life has in store. According to Dr. David Goldberg, a student only needs "...seventh grade math and literacy, but … at the A level, … where it's actually functional." He goes on to explain, stating that below A level, a person is only [correct] 60 or 70 percent of the time, which is not a usable understanding when applied practically.

Also, on the second level are social skills. We define social skills as the ability to communicate with others. Social skills are important because they help students navigate through everyday life, however they are often learned while learning other skills. Social skills primarily focus on the day-to-day communication that is a part of our world. As social skills tend to be passively received while participating in all activities, programs generally do not need to have a focus on developing them, resulting in a relatively low weighting.

On the third level is critical thinking. Critical thinking is important as it assists students in figuring out solutions to their problems. This was heavily stressed in the CSM course, which included subjects like connecting information and linking steps. According to Dr. Jason Ravitz, it is also one of his four most important characteristics to teach, which are creativity, collaboration, critical thinking, and communication. As this was stressed in the CSM course and brought up again in our interviews, therefore, we determined that it belonged on the third level.

Curiosity also finds a place on the third level. We define curiosity as a genuine interest in learning. This is important, because it creates engagement and motivation, which have been shown to increase information retention in children (McGillivray, S., Murayama, K., & Castel, A. D., 2015). Information retention leads to better long term education outcomes overall. Curiosity also fosters passion, according to Dr. David Goldberg.

On the fourth level is collaboration and peer-mentoring. It is important to be able to work with and learn from others who are at the same level as you. As stated by Dr. David Goldberg, "...there's a skill to learning [from teachers]. And [students] are actually generally pretty good at it, except … all of a sudden, you're learning on your own which is a little bit different." David's point is that once students leave the school system's world of teacher-centric learning, it is important that students are able to learn from their peers, rather than only from teachers. Collaboration was also mentioned by Dr. Shelly Gruenig, who stated that her program is a "...peer training model, so students are teaching students." As these traits came up in multiple interviews for extended periods of time, we determined that it belonged on the fourth level.

Also on the fourth level is persistence. This was another skill stressed by the CSM course. The ability to make a mistake and keep going is important, as humans are not infallible. In the CSM course, you are required to get 100% of a section right in order to pass. If you do not get everything correct within three attempts, the course has you move on and come back to it later. The course will not let you give up on it, but will instead give you a break. This is further reinforced by the course informing you upon completion what percentage of college graduates could match your accomplishment.

On the fifth level is leadership. Leadership is important, providing the ability to teach others and to help others pick themselves up when they fail. In the interview with Dr. Gruenig, she stated that "[She runs] the robotics team and program as a business, so students apply for positions and it is a competitive process." She also stated that some students did not realize that they were ready for a leadership position due to a lack of confidence, despite the fact that she

believed they were ready. With a slight nudge, most of these students quickly gained confidence and stepped easily into the role.

The final two traits on the fifth level are self-confidence and self-efficacy. According to the co-founder of CSMlearn, "...the single most important thing for success is self-efficacy, … your belief in your ability to succeed." He also stated that self-efficacy is your earned self-confidence. In every interview that we had, self-confidence came up in one way or another, therefore it was only fitting to put self-confidence, and by proxy self-efficacy, in the fifth level.

The final trait, cost, does not fit into the standard level system. Education is important for people from all walks of life, meaning that cost should not be a limiting factor in improving one's education. As such we decided that cost would have its own weighting as shown in appendix I, and discussed in depth in the Results: Resources that Best Teach Characteristics of Success section.

Recommendations

After we discussed how all of the characteristics work together, we determined that there are three traits that resources offer that have the greatest impact on participants. We found that long-term support, engagement, and affordability were the best way for resources to develop and support all of the characteristics of success that we previously discussed.

Long-term support is important for programs because many of the characteristics described above take time to develop. Several interviewees stated that having a supportive community is helpful in childhood development, and friends are one way to create a supportive environment. The soft skills like self-confidence and social skills take time, as they tend to grow alongside a participant's skill level in the activity. Lastly, allowing members to stay in programs long-term allows them to gather experience and become capable leaders of their peers, allowing them to gain leadership skills before entering the workforce.

In addition, engagement is an important trait, because engagement encourages interest. If someone is interested in what they are learning, that interest creates curiosity and excitement. Engagement also encourages other areas of growth, including in school. Dr. Jason Ravitz gave an example of an economics teacher who would make the information relevant to the students, leading them to be more engaged in the learning. Studies have shown that students will absorb more information if it is a subject that they are interested in (McGillivray, S., Murayama, K., & Castel, A. D., 2015). The idea of engagement also helps draw children into long-term programs, since the children are interested in the subject matter.

Keeping affordability in mind was a key factor for us during the evolution of our project. We wanted to focus on researching resources that keep costs low for one essential reason: it allows the most disadvantaged populations to get the most out of any resource. There are often financial elements in a community's existing educational support structures that create a gap between those who can afford external resources and those who cannot. Many families are not able to rely on the higher quality resources in a community because they are too expensive. Therefore, we believe that community resources should highly value being as low cost as possible.

In order to best recommend resources for students and families to use, we needed to find a way to determine their value. As such, we evaluated all the resources that we found on the basis of the leveled characteristics identified at the beginning of this section.

Objective 3: Evaluate Data Gathered to Find What Resources Best Support Students

       Based on the previously stated importance of each characteristic, we assigned them point values. The point values represent how important each characteristic is for a resource to teach based on our research. Characteristics of the highest level were given a point value of five, while characteristics of the lowest level that are still directly positive were given a point value of one. Depending on the importance of the characteristic, the values between one and five were also used to create a smooth range. Table 1 in the previous section denotes their weight value.

       We then scored each resource out of five based on how well the resource reinforces or exemplifies each of the ten leveled characteristics, separate from the weight of the characteristic. For example: the importance of exposure to technology is valued at a one. However, the resource can still receive a score from one to five depending on how well the resource exposes you to technology. In Table 2 below, one can see that social skills have a weight of two, but that the Children's Adventure Company exemplifies social skills well, giving it a rating of five points.

       After determining the values for each resource, we created a decision matrix with all of the characteristics and their point values as the rows and the resources as the columns. The primary reason that we did this was to keep all of our data organized in one place. This arrangement helped us to compare resources to one another more easily. For instance, one can see (Table 2) that even though Social Skills are weighted as only a two, we found through our research that the resources shown excel at teaching that subject, so they get fours and fives for their value for that characteristic.

Table 2: Example Portion of Decision Matrix

Characteristic	Characteristic Rating	Santa Fe Little League	Santa Fe Municipal Recre	Children's Adventure Company
Exposure to Technology	1	2	1	1
Social Skills	2	4	4	5
Math and English Skills	2	1	1	1
Curiosity	3	2	1	5
Critical Thinking	3	3	4	3
Persistence	4	4	5	3
Interaction and Peer Mentoring	4	4	4	4
Leadership	5	4	3	2
Self Confidence	5	3	3	3
Self Efficacy	5	3	3	3
Benefit		109	107	105
Cost (Daily)		$1.00	$5.00	$25.00
Total Score	Max Score: 170	109	107	29.64452055

       After making the decision matrix of characteristic weights and their values for each resource, we multiplied the value of how well each resource taught a characteristic by the weight of that characteristic. We then summated all of the products of the multiplication for each resource. This final summation, which we called the benefit score, was the first portion of the formula we created to determine each resource's overall score.

       Our next problem was including the cost of a resource in the process of calculating its final score. This section of analysis was a large discussion topic and therefore went through many iterations. There were many rudimentary ideas that didn't make sense logically or mathematically, including dividing the benefit score by the cost of a resource. The closest we came to a usable formula in the beginning used a ranking system of the resource costs that

worked well for some resources, but heavily undervalued others. However, our final iteration of the formula was much more logical.

In its final iteration, the cost analysis part of our scoring system relied on a practical economic basis. We estimated how much money a family in New Mexico would be able to spend every day, based on median income, median cost of living, and assuming that twenty-five percent of their leftover income went to savings. We then spread this discretionary income throughout the year into a daily budget. It should be noted that this budget was purely for our analysis purposes. In the deliverable, users are able to enter their own daily discretionary budget to get personalized recommendations.

The rest of the cost analysis system was dependent on this daily budget. Our formula used two different calculations, depending on whether or not the daily cost of the resource fell within the daily budget. If the daily cost fell within the budget, the resource's final score would be unchanged from the benefit score. If the daily cost was outside the budget, then the benefit score was divided by the percentage by which the resource fell outside of the budget. For instance, if the daily resource cost was 345% of the daily budget, then the benefit was divided by 3.45. This is meant to highly value resources that fall within the budget of the average resident while not punishing resources too greatly if they fall outside of this range by a small amount. For the entire formulation written out as a mathematical expression, see Figure 1 below:

Figure 1: Grading Equation

Let J be the index of all Characteristics indexed by j

Let I be the index of all Resources indexed by i

Let R_{ij} be the Grade of the Resource i for Characteristic j

Let C_j be the Weight of the Characteristic j

Let M be the Amount of Money a Household Can Spend on Activities

Let P_i be the Daily Price of any Resource i

Let G_{R_i} be the Final Grade for Resource i

$$\text{When } M \leq P_i: \quad \frac{\sum_{j \in J}(R_{ij} \times C_j)}{1 + \left(\dfrac{|P_i - M|}{M}\right)} = G_{R_i}$$

$$\text{When } M \geq P_i: \quad \sum_{j \in J}(R_{ij} \times C_j) = G_{R_i}$$

Results: Resources that Lead to Student's Educational Success

When we assessed our discoveries, we found some notable examples of resources that exemplify the characteristics that develop participants' success. In Figure 2 is a subset of the resources we found and the approximate scores they were given by our algorithm:

Figure 2: Ranking the Top 10 Resources by Score
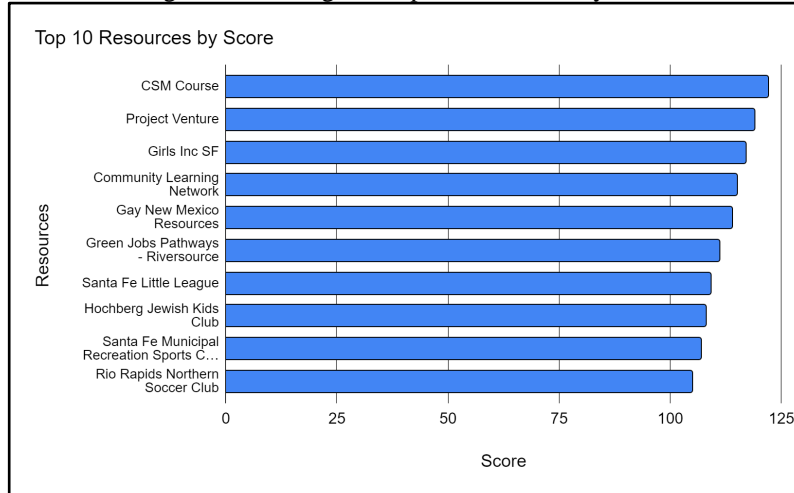
Within these resources, we would like to discuss a few that stand out for their distinct emphasis on particular characteristics.

Gay New Mexico Resources

Gay New Mexico Resources lists a variety of LGBTQ+ friendly clubs, businesses, and activities. The website is a highly valued resource that fosters some of the most crucial characteristics, mainly self-confidence and accessibility. Self-confidence or pride is a focal point of many LGBTQ+ resources. Similarly, this resource helps others to believe in themselves and their identities. Therefore, it is a positive influence on the people in the community who find themselves lost. Gay New Mexico Resources is free to access for anyone with an internet connection, further increasing its overall accessibility.

Santa Fe Little League

The Santa Fe Little League is particularly noteworthy because it, along with many team sports, emphasizes Peer Mentoring, Communication, and Leadership. Becoming part of a team is a great way for children to learn teamwork and how to communicate with their peers. There will also be children that are naturally gifted at some aspects and not others. Naturally talented kids tend to mentor those less experienced than themselves (Darnis, 2013). Peer mentoring can lead children smoothly into leadership positions. For instance, if a child is good at pitching, then they would likely help other children with their pitching as well. Their experience helping others provides a transition point into leadership roles like team captains. Of course, there are other ways to leadership beyond simple competence, but this example clearly displays how leadership can be fostered within a team sport environment. The Little League in particular is more valuable to the community than other sports programs because the entire season of baseball only costs about six dollars per practice per person.

Santa Fe Libraries

The Santa Fe Library System has two major strengths. The biggest benefit the library provides is exposure to technology. The library provides a place for anyone to go and use a computer for free. This opens up a wide variety of resources for people to use and exposes them to the internet and its information. Similarly, the library also fosters curiosity. When at the library, anyone can go and find information through books or online that they are interested in. That curiosity can create a path that leads to a greater understanding and a greater urge to learn.

Hochberg Jewish Kids Club

A final resource we would like to touch on is Hochberg Jewish Kids Club and how the club helps to build a sense of community and confidence based on its members' identity. As the name implies, this is a resource that is mainly meant to build up the Jewish community members. The club has multiple activities, including learning modern Hebrew, Jewish music, and traditional Jewish cooking. The Hochberg Jewish Kids Club helps to bring the Jewish community together through common identity and culture. Therefore, it can also benefit a person's confidence in themself and their abilities.

Trends

Our data can be viewed as the summation of many individual resources. However, within the summation of these resources, overarching trends emerge that are worth further analysis and discussion.

A simple trend that is displayed throughout the data is the importance of affordability for each resource. For instance, twelve out of the top fifteen highest scoring resources fit within an estimated daily spending budget of the average (median income) Santa Fe family. Moreover, nine out of the top ten highest scoring resources fall within the same parameter. This discovery informs us that for any resource to have a major positive impact on the community, it has to be accessible for the people it aims to help. To further emphasize this point, we used a rather high budget for our formulation, and results still emphatically show the trend. We based the budget on the median income of Santa Fe families, rather than the lower income families, including those who live outside Santa Fe but access community resources. The results would be even more pronounced using a lower budget from one of these families, as many of the top resources are free and will remain as top resources regardless of budget. It cannot be overstated how important affordability of a resource is for the income brackets that need these resources the most.

Another trend that dominates our scores is the prevalence of resources that cater to underserved communities. Every resource that we found that was meant to serve a minority or disadvantaged community was within the top fifteen highest scoring resources out of twenty. This trend can also be seen in how four out of the top five resources serve disadvantaged communities. We gleaned two messages from this trend. First, some of the best resources stem from communities that are in need of them, and second, that these resources are of such high quality out of necessity. The perspective of needing to be a high quality resource for their demographic is reflected by how many of these resources lend themselves directly to, and for, the demographic that they represent.

However, with all of the positive aspects of these resources, a significant weakness that some of them share is their discoverability. For instance, we had to directly search for resources that serve native communities for a notable period of time before finding one called Project

Venture. Moreover, when it came to resources that cater to the LGBTQIA+ community, we had to be directly referred to Gay New Mexico Resources. As we hope to spread our project's discoveries through our deliverable, one of our goals is to advertise and help make people aware of these projects in the best way we can.

Objective 4: Determine the Best Method of Delivering Information

As we considered how to present the findings to the wider community, we faced several problems and used several different methods to determine and evaluate potential delivery methods. When we began our research, we immediately found several restrictions that we had to work around. First, large portions of the target communities have limited or no access to the internet, making internet-based delivery methods less effective in reaching the entire audience. Secondly, while the pandemic is winding down, its effects are still felt. People are still hesitant to go out (Hwang et al. 2020), limiting the spread of in-person information. As these problems came to light in our research, we realized that it was important to learn more about how people get their information in disconnected communities.

In our interviews, we asked several questions about how people in low-internet communities receive news from the outside world (see Appendix F for specifics). Our sponsor also had some recommendations on how he would like to receive the information that might also help in the wider community. Our research questions allowed us to remain grounded in the actual lives of New Mexico residents.

Results: Delivery Method Options

The results of our interviews showed that the primary ways that people receive information in low internet communities are through the radio and word of mouth. Despite these problems, our sponsor also recommended an online website-building resource called ArcGIS StoryMaps. These comprised the choices available to us.

We researched all three options to determine which of the three was the best for our project. We found that using radio advertising was expensive (*KMGA Radio Advertising Costs*), though it remains an option for anyone looking to extend the reach of the project. We also determined that word of mouth was not an acceptable primary delivery method, though it remains an excellent secondary method. Word of mouth relies on having a large initial pool of knowledgeable people, which this initiative does not have, though it can be created through another method. Eventually, we decided that a website created through the StoryMap interface would be our best option both to reach the greatest number of people possible and satisfy the requirements of our sponsor.

We decided that the website would need three things: an interactive list to sort the resources that we present, a map portion to take advantage of the ArcGIS system and provide location information, and a set of longer descriptions to create an all-in-one information hub. The sorting list is important to consumers and viewers to allow them to quickly find what they are looking for. The map also allows consumers to identify resources by location, which may be important to some groups, especially those who may not have a car. Lastly, it should be noted that although the space available for descriptions and information on the map interface itself is not very large, we can link to a longer description later on. Longer descriptions allow consumers to begin to understand the purpose and services of a resource before looking for more information elsewhere. Examples of each can be found in the next section.

Deliverables

The StoryMap website is composed of three parts: the sorting list, the map, and longer descriptions. All of the components can be seen in an in-progress state in Figures 3, 4 and 5.

Figure 3: The Sorting list

Enter an amount you would be willing to spend daily on activities:

$4.65

This will help us to generate personalized recommendations for you.

Organization	Daily Cost	Advising Score	Ages	Activity Genre	Raw Cost	Demographic
CSM Course	$2	100	16 and up	Math, English, Practical Skills	$39.00	Any
Project Venture	$0	97.54	5-18	Outdoor Activity, Social	$0.00	Native Americans
Girls Inc SF	$0	95.9	5-11	Variety	$0.00	Women
Community Learning Network	$0	94.26	5-18	Variety	$0.00	Any
Gay New Mexico Resources	$0	93.44	Any	Variety	$0.00	LGBTQIA+
Green Jobs Pathways - Riversource	$0	90.98	13-18	English, Science, Outdoor Activity	$0.00	Any
Santa Fe Little League	$1	89.34	4-16	Sports	$55/season (8 weeks)	Any
Hochberg Jewish Kids Club	$2	88.52	5-18	Variety	$500/year	Jewish People
Santa Fe Municipal Recreation Sports Complex	$0	87.7	Any	Sports	$0.00	Any

By clicking on a header, the sort order or sort column can be changed. In Figure 3, the table is sorted based on a personalized recommendation, from most recommended to least recommended. The table pulls and updates automatically from Google Sheets to allow for ease of editing, such as adding more columns or more resources.
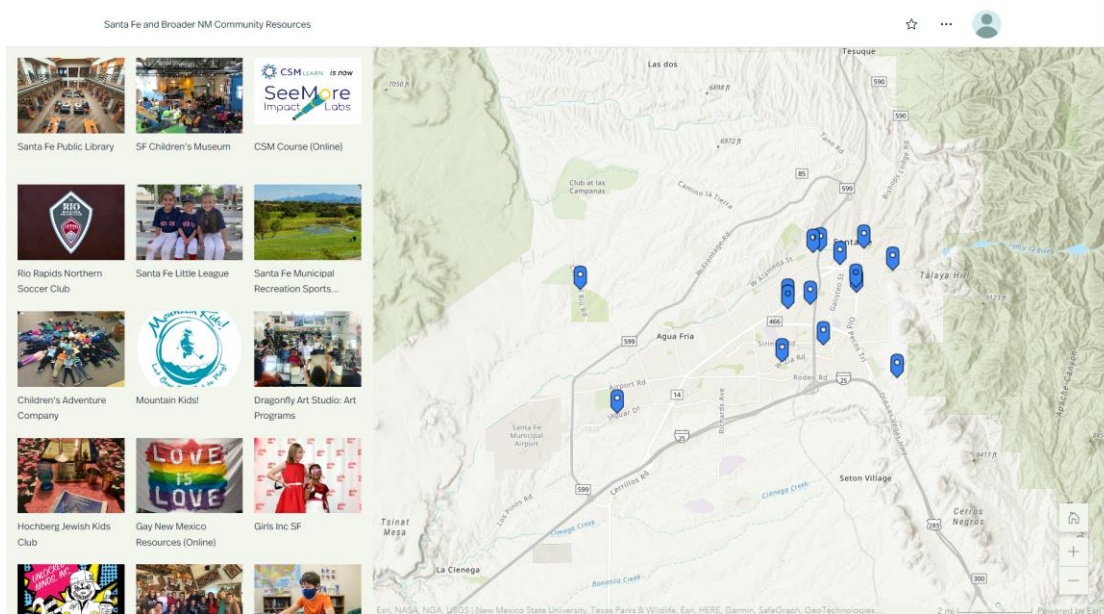
Figure 4: The main site interface

Figure 4 shows the main map interface, which shows the list of available resources on the left, with their location on the right. See Figure 5 for the result of clicking on either a location or resource.

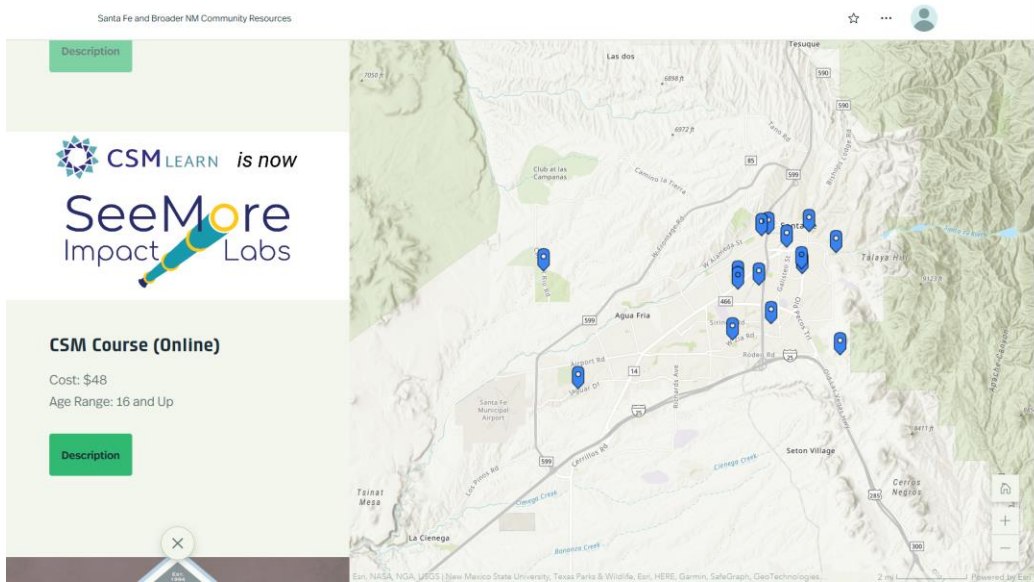Figure 5: The map portion of the story map with a resource selected

Figure 5 is an image of the map interface with a particular resource selected. Very little space is available for descriptions, therefore, only the most relevant details are included here, such as cost and age range. The map on the right shows the location of the resource, though it can also be added elsewhere. Finally, the description button links to a longer description, of which an example can be seen below.
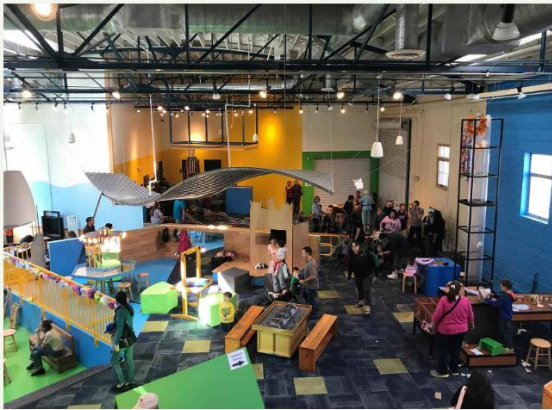
Figure 6: A longer description while still in progress

Figure 6 is an example of an in-progress longer description. It provides an image, a description of features and services provided, and more information on the resource than is provided next to the map. A final note to consider is that it also provides a link to the resource's website, if available, to allow consumers to continue their research easily.

Summary

We created a large list of community resources in Santa Fe through our sponsor, interviews, and the internet. Some of the resources were less worthwhile to the population than others. To distinguish resources from each other, we created a list of qualities that help guide children to success and determined which programs best developed these traits.

Over the course of several interviews with educational professionals, a pattern emerged. Most of the interviewees stated that leadership, self-confidence, collaboration, and critical thinking, among others, were the most important characteristics to learn for a child's development. The best way to develop these skills was to keep children in an activity for an extended period of time. Two primary enablers of long-term participation are the engagement of the child and the cost accessibility of the resource. Keeping children in at least one activity for multiple years allows them to increase their skill level enough to be confident in themselves, and depending on the program, to progress from member to mentor. This allows them to further develop leadership skills.

We created a formula to rank the resources, showing which activities supported the ideals that we identified. We found a number of different programs, from online courses to sports programs to educational clubs, that were both accessible and developed the qualities that were identified as important to the growth and well-being of their children.

Many of the resources were intended for underserved audiences, meaning that they are especially important for the community as a whole. Unfortunately, they also tended to be the hardest to find. This finding influenced our decision on how to share these resources with more people.

We created the website with three parts: a list to sort the resource based on several qualities, a map to show location information, and a section of longer descriptions to allow consumers to research the displayed resources without ever leaving the page.

Conclusion

Overall, we found characteristics that lead to success, resources that provide these characteristics, and a way of sharing these resources with the community. We hope that by sharing community resources with the public, we can help reduce strain on New Mexico's educational system by sharing the workload with other resources. This supportive education structure will improve the community's overall wellness.

Our findings have highlighted multiple resources that would benefit the community and its educational wellness. Using a process similar to ours, new research groups can use decision matrices, equations, and story maps to expand this project outside of Santa Fe. Our vision of further research includes researchers creating more story maps and finding more resources within different communities.

However, story maps are not the only way of sharing this information. We made a story map because we could complete it within the time limit of our project, but we understand that there may be better ways of sharing this information. People who want to expand this project may want to look into using radio and word of mouth to spread this information over a wider community. We hope that this project continues to grow and to help members of the community in the future.

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Appendices

Appendix A: Preamble

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about _____. The interview will be about 30-45 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melissa Belz, at zeddy@wpi.edu and mbelz@wpi.edu, or our group at gr-nm-faces-ab22@wpi.edu, with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record just the sound?"

Appendix B: Interview for Educational Professionals

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about the education system. The interview will be about 30-45 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melissa Belz, at zeddy@wpi.edu and mbelz@wpi.edu, or our group at gr-nm-faces-ab22@wpi.edu, with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record just the sound?"

1. What is your highest level of education?
2. Does your administration support you?
3.
    a. Is the curriculum adequately preparing students for the workforce or college?
    b. Do you believe that there is a subject where students are falling behind?
    c. What changes would you make to the curriculum to improve it?
4.
    a. What resources would you like students to use outside of the classroom?
    b. If students need additional help, where do you direct them?
5. What would you change to have the biggest impact on education outcomes?

Appendix C: Interview for David Goldberg

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about your CSM course and the values that led you to make it. The interview will be about 40-60 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melisa Belz, at zeddy@wpi.edu and mbelz@wpi.edu , or our group at gr-nm-faces-ab22@wpi.edu , with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record the zoom call?"

1. Tell us about yourself
2. Why did you decide to create the CSM courses?
3. In your own words, what is the purpose of this course?
4. What past educational experiences inspired you to make this course?
5. Do you know roughly what percentage of people start the course, but don't finish it?
6. Do you know of any particular success stories of people who have taken the course?
7. What makes the CSM course more effective than other learning strategies, especially in underperforming schools?
8. Are you involved with any community projects, and if so, what kind?
9. If you know of anyone who would have an insightful opinion on this subject, feel free to give them our contact information: (He already has our email) 845 - 500 - 1877

Appendix D: Interview for Jason Ravitz

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about some educational programs and how you've evaluated them. The interview will be about 30-45 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melisa Belz, at zeddy@wpi.edu and mbelz@wpi.edu , or our group at gr-nm-faces-ab22@wpi.edu , with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record the zoom call?"

1. Tell us about yourself
2. In your own words, what is ctl's purpose?
3. What past educational experiences inspired you to do this research?
4. What characteristics of an educational resource can help to make it more valuable?
5. What programs have you found to be successful?

Goals

Intros

Research trajectory

Explain your Research (if not already)

What programs have you found to be successful?

Project based learning

Appendix E: Interview for Shelly Gruenig

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about some educational programs and how you've evaluated them. The interview will be about 30-45 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melisa Belz, at zeddy@wpi.edu and mbelz@wpi.edu , or our group at gr-nm-faces-ab22@wpi.edu , with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record the zoom call?"

1. Tell us about yourself
2. How is your curriculum adequately preparing students for the workforce or college?
3. What changes would you make to the wider school system curriculum to improve it?
4. If students need additional help, where do you direct them?
5. What would you change to have the biggest impact on education outcomes?

Goals:

1. Intro
2. Engagement (be greater than average)
3. Curriculum Motivations
4. Success

Appendix F: Interview for Local Artist

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about connecting with people outside of the technology based social sphere. The interview will be about 30-45 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melisa Belz, at zeddy@wpi.edu and mbelz@wpi.edu , or our group at gr-nm-faces-ab22@wpi.edu , with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record the conversation?"

1. Tell us about yourself
2. What inspired you to get into art, and art with such meaning?
3. Did you feel supported by the educational system when you were growing up?
4. Who is your audience?
5. How do you reach your audience, and how does your audience reach you?

Goals:

1. Intro
2. Art Icebreaker
3. Support by education?
4. Reaching audience/ Connectivity

Appendix G: Interview for Director of Education at a Local Museum

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about your experience in New Mexico's educational system, and what programs you have for the children at the museum. The interview will be about 30-45 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melisa Belz, at zeddy@wpi.edu and mbelz@wpi.edu , or our group at gr-nm-faces-ab22@wpi.edu , with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record the conversation?"

1. Intro
2. How do you notify the community about your programs?
3. What programs do you have at the museum?
4. What programs do you look for to bring into the program?
5. Are there different projects for different age ranges?
6. Is there mentorship that happens within your program?
7. How do you work around children's school schedules and parents schedules?
8. Do you find that the homeschooling network is involved in your programs?

Goals:

-Intro

-community outreach

-programs

-program goals

-program duration (mentorship)

-scheduling

-homeschooling (involvement)

"We are a group of students from Worcester Polytechnic Institute in MA. We are doing research about determining and sharing resources available to the community that would help to increase educational outcomes and wellness. For this interview, we wanted to ask you about homeschooling, alternate programs you may go to or use, and budgeting. The interview will be about 30-45 minutes. Your name will be kept confidential unless you give us permission to use it. This interview is voluntary. You may skip any questions that you do not wish to answer. You may also stop at any time. This research will be available to the public via the WPI Library. Please feel free to ask any questions you have about this research at any time. You may also contact our research advisors, Prof. Zoe Eddy and Melisa Belz, at zeddy@wpi.edu and mbelz@wpi.edu , or our group at gr-nm-faces-ab22@wpi.edu , with any questions you have about this process. We would like to record our conversation only for our note taking. Is it ok to record the conversation?"

1. Intro
2. Why did you decide to homeschool?
3. Do you go to or use any programs to help teach your children, if so which ones?
4. How have those programs helped you teach and children learn?
5. How do you manage your budget for programs and activities?
6. Would you be interested in knowing how many days you would have to save up for a particular program?

Appendix I: Grading Formula

Let J be the index of all Characteristics indexed by j

Let I be the index of all Resources indexed by i

Let R_{ij} be the Grade of the Resource i for Characteristic j

Let C_j be the Weight of the Characteristic j

Let M be the Amount of Money a Household Can Spend on Activities

Let P_i be the Daily Price of any Resource i

Let G_{R_i} be the Final Grade for Resource i

$$\text{When M} <= P_i: \quad \frac{\sum_{j \in J} (R_{ij} \times C_j)}{1 + \left(\dfrac{|P_i - M|}{M}\right)} = G_{R_i}$$

$$\text{When M} >= P_i: \quad \sum_{j \in J} (R_{ij} \times C_j) = G_{R_i}$$

Appendix J: CSM and Career Strategies Course Notes

CSM:
CSM uses a belt system in order to show competence with a certain skill. It is required to get a black belt (100% with no help) to get a passing grade on any given subject.

It had quite a bit of simple math and English, but what it spent the most time on was qualitative reasoning/critical thinking. This included determining important information and problem solving skills. It also used both metric and standard units.

It had a multitude of ways to help students. Upon getting a question wrong, it showed what you answered and the correct answer. It also gave the option to go step-by-step through a problem and concepts. In the concepts, it gives the definitions of keywords after clicking on a bolded, colored word.

It overall focused on making sure that someone could complete things themselves. Whether it was math, english, or problem solving, it kept trying to encourage people to get it fully right.

Career Strategies:
I believe that this part is even more important than CSM, though I am probably biased. This section talked about jobs vs careers, building assets, choosing a career, and education being an investment.

This was less question focused and more reading focused. Upon going through this first major section, it talked about a career being a place to grow. It also talked about how there are different kinds of assets. There are the things you know, but also the people you know and how you present yourself.

In the latter major section, it talked about how to choose a career and what education was needed for certain jobs. It went through the difference of income based on job and if the education was worth it. It also showed the difference between saving money and spending it constantly.

I think this section is something that schools are missing to a major degree. Showing students how all these things work will overall help people to understand how to build themselves up more.