Empowering Families to Support their Child's Education: A Pilot Program

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1 Abstract

This thesis delves into the multifaceted landscape of computer science education within underprivileged and underrepresented communities, focusing on its impact on students' journey towards higher education. Grounded in the principles of cultural capital and asset-based teaching methodologies, this research endeavors to address the barriers confronting students by offering tailored workshops. These workshops provide a scaffolded framework that empowers students and families to navigate educational opportunities, financial aid, mental health, and more. The thesis explores the significance of cultural capital in shaping students' academic trajectories and advocates for an approach that acknowledges and leverages the diverse strengths within these communities. By integrating culturally relevant content, collaborative curriculum design, and dynamic teaching methods, the workshops aim to foster inclusivity and empowerment. The culmination of this effort reflects a commitment to creating an educational landscape characterized by equity, unity, and transformative growth.

2 Introduction

The confines of my world, characterized by well-taught high school education and the absence of financial or familial burdens, masked a greater reality—a mere bubble within the broader context of Washington. Oblivious to the existence of realms where education took a back seat and issues such as gangs, drugs, and struggling families prevailed, I remained ensconced in my cocoon.

This ignorance shattered when a friend exposed me to the unvarnished truth—the echoes of gunshots in Auburn's trailer park, incessant schoolyard brawls, young lives consumed by drugs, the absence of future aspirations among students, parents grappling to make ends meet, and children prematurely surrendering their innocence to embrace adulthood. The jarring normalcy of it all was an epiphany that propelled me into action.

My commitment was clear: I must strive for a world where the ladder of opportunity is accessible to all. Thus, I embarked on a mission to introduce computer science education to underprivileged high school communities. Through in-depth interviews with educators across Auburn, Federal Way, Renton, and Kent, a collective lament emerged—a lack of computer literacy, technology access, community cohesion, parental guidance, and transportation were formidable barriers. Echoing narratives from countless students confirmed the urgency of dismantling the status quo.

I was fortunate, having been nurtured in an environment that cherished education, fortifying my journey toward a prosperous career unmarred by financial constraints or familial turbulence. This privilege ignited my belief in extending this ascent to others. Drawn from shared experiences of peers who traversed thornier paths, I resolved to carve a smoother passage for future generations. My purpose coalesced into a program tailored to facilitate the journey of middle and high school students toward higher education.

In the dynamic landscape of today, higher education serves as a gateway to personal development, socioeconomic progress, and professional triumph. Yet, this trajectory is far from uniform, as distinct communities grapple with unique obstacles impeding their educational pursuits. This thesis embarks on a comprehensive exploration of the barriers confronting students from underrepresented and underprivileged backgrounds in their pursuit of higher education. Focused on computer science education within K-12 settings, this research endeavors to illuminate pathways that bridge the gap to equitable higher education opportunities.

2.1 Background

Education's role as an upward mobility catalyst is universally acknowledged, yet disparities endure, particularly within marginalized communities grappling with scarcity, systemic inequities, and cultural hurdles. This thesis delves into computer science education's realm, recognizing its pivotal role in shaping students' future prospects. The exploration centers on students navigating the educational spectrum from K-12 to higher education, hailing from backgrounds underserved and under-resourced.

Computer science, endowed with transformative potential, has emerged as a critical skill set for the contemporary workforce. However, its equitable distribution across underserved communities remains uneven. This exploration critically examines computer science education's landscape within

K-12 contexts, probing its intersection with social, economic, and cultural dynamics. Through a multifaceted lens, the research dissects challenges students encounter, strategies educators deploy, and resources illuminating pathways to higher education.

2.2 Contributions

The culmination of this research effort has yielded an extensive compilation of background research that delves into the landscape of computer science education in K-12 settings, particularly focused on its impact on underserved and under-resourced communities. The goal is to illuminate pathways for students to access higher education opportunities by emphasizing the significance of cultural capital and asset-based teaching methodologies. Through a comprehensive array of interviews encompassing students, teachers, high school faculty, and university organizations, a mosaic of viewpoints has emerged, underscoring the multifaceted nature of success in higher education. This underscores the imperative of adopting a holistic approach that integrates diverse perspectives while acknowledging and addressing existing barriers. The tangible outcome of this work is formulating a pilot-study program comprising four workshops: "Introductions & Identities," "Educational Opportunities," "Financial Aid," and "Mental Health." These workshops provide a scaffolded framework for families and parents to navigate the educational system and facilitate their children's journey towards higher education.

2.3 Thesis Overview

In section 2 we will discuss an extensive compendium of related work. Section 3 will discuss the interviews with students, teachers, administrators, and advisors in high school and college settings. Section 4 will detail the major contributions of this work: a series of workshops aimed and assisting high school students in knowing what academic options are available for them. Finally, we will provide a summary and directions for future work.

3 Related Work

3.1 Research Paper Collection

The background for the work to develop an inclusive K-12 outreach model spans research in computer science and education pedagogy in underserved and under-resourced communities.

The first paper reviewed was about *Developing an Inclusive K-12 Outreach Model* [1]. This entailed the development of a k-12 CS outreach pilot program that was a two-hour camp that introduced students to a range of CS topics. The pilot was a large scale 3-year long program included the introduction to the roles of computer scientists, hands-on coding using Micro:bit, and hands-on problem-solving using the Bebras challenge. The research was done through qualitative questioning of demographics and examining the interests in CS and prior knowledge. While the paper is more suited for introducing CS to schools and not for addressing the needs of underserved communities, the paper did motivate the idea of a 2-hour workshop. The authors found that two hours was a comfortable amount of time for students to partake in a workshop as it matched their schooling schedule.

The next insightful paper was actually a panel: *The Needs of K-12 Computer Science Educators Towards Building an Inclusive Classroom: Implications for Policy, Practice, and Research* [2]. The panel consisted of educators who addressed the question of What now? As it relates to policy, practice, and research needs in building more equitable computer science classrooms: Kalisha Davis, and she was a former director of community outreach and engagement at the Detroit historical society where she did the Detroit 67 Project. Bryan Twarek worked on other policies and Dinah Becton-Consuegra, and Sonia Koshy. While the panel abstract was very brief and didn't go into depth about each of the panelists, but it pointed to additional work done, particularly by the first panelist.

Another panel, *The Joys and Challenges of Outreach in CS Education to Low-Income Populations*. focused on identifying the rewards in order to encourage the audience to create programs targeted at low-income communities and identify the challenges in order to help the audience understand how to mitigate them [3]. The three panelists were: Regine DeGuzman, a Software Engineer Intern at Tesla Motors, worked at the U.S. Census Bureau where she developed and strategized new K-12 resources to improve data science literacy across the nation. EJ Jung, an Associate Professor at University of San Francisco, shared the benefits and challenges of running free coding camps for these girls in a city known for tech innovations. Theresa Migler, an Assistant Professor at Cal Poly, San Luis Obispo, discussed the difficulty of supporting students, who are incarcerated, after completion of her computer programming course at county jails

Culturally-Centric Outreach and Engagement for Underserved Groups in STEM [4] discusses an innovative and effective approach to learning Science, Technology, Engineering, the Arts, and Mathematics (STEAM) with an emphasis on using expressive arts as a culturally-centered engagement tool. Their framework incorporates a multimodal model that considers unconventional learning styles that appeal to underrepresented and underserved students, the power of cultural cues, and the presence of minority STEM professionals to shape students' learning experiences. Their series of workshops and parent panels are called Pathways to STEM and focus on introducing underrepresented and underserved youth to the power of computing. They made an interactive game using knowledge about the Cartesian coordinate system. Music Notes was used to engage students in a call-and-response style of rapping hip-hop to learn math. Each of these interactive workshops were culturally centered with students. The authors also highlighted the importance of parents in motivating students and stimulated this with a parent/guardian panel focused on informing parents. The role of parents being so vital kept coming up throughout the background research with computer science teachers, current university students, and outreach efforts motivated a core theme in this thesis.

Additional research papers were read, but either tangentially related to this thesis work or repeated themes already discussed here. Still others documented more niche topics such as machine learning and various pedagogy styles not related to underserved communities.

3.2 Undocu Training from Leaders Without Borders

Leadership Without Borders (LWB) provides a series of quarterly trainings for UW faculty and staff to learn about the experiences of undocumented students in the campus community, how to be an ally to this student population, and how to personalize best practices to support undocumented students [5].

All the LWB Undocu Ally trainings cover the following topics listed in Table 1.

Focus Areas:	Objectives:
• Undocumented student narratives • Laws and policies affecting undocumented students • How to improve support services for undocumented students • How to be an ally for undocumented students • Case studies	• Learning about the stories and experiences of undocumented students. • Become familiar with laws and policies affecting undocumented students. • Identify and make a commitment to use immigrant sensitive language • Personalize best practices

Table 1: Topics covered in the LWB Undocu Ally training.

Our approach aimed to centralize the experiences of undocumented students and their families due to the significant presence of undocumented families within underserved backgrounds. This awareness enabled us to gain insights into the specific resources and actions necessary to address their unique needs. A vital takeaway from this study has been the paramount importance of comprehensive community inclusion in project initiatives. This extends beyond mere surface-level research into undocumented or Latino communities; it entails a deep understanding of their lived realities, facilitated by direct engagement within their communities. This experiential understanding was cultivated through interactions with entities such as the Ethnic Cultural Center, MECHA, Leaders Without Borders, and engagements in various University of Washington and external events, including protest gatherings, religious institutions, and cultural gatherings.

3.3 Coursera Course: Identity Inclusion for K-12 Computer Science Educators

The Computer Science Teachers' Association (CSTA) Coursera course Identity Inclusion for K-12 Computer Science Educators covers topics involving privilege, race, having safe conversations, and promoting inclusivity [6]. The goal of the course is to give participants a foundational understanding of fostering a safe and inclusive computer science classroom

Specifically, the objectives were as follows:

1. Get to Know Yourself and How Your Intersectionality Translates to Privilege / Marginalization. In this module, participants were able to explore our identity and how they share with others. Participants devised a plan to implement intersectionality practices that incorporated every student's learned experiences.

2. Explore the Race Construct and Examine the Cycle of Oppression. Participants observed the history of the race construct and examined the cycle of oppression through the lens of teachers and took a look at technologies that reinforced oppression with lessons in the classroom.

3. Reflect on Race Perspectives & Facilitate Safe Conversations. Participants prepared for classroom discourse involving race, its different perspectives, and designed norms that are inclusive and devised plans to overcome any struggles that might arise.

4. Combat Implicit Biases and Promote Inclusivity. Finally, participants evaluated their own biases, identified non-inclusive CS terminology, and created an action plan to counteract those biases.

Some main takeaways from the course that are incorporated into this work include the following: learning environments need to be developed where all kids feel valued, which, while straight-forward sounding, it entails specific key components. We need to support marginalized identities and understand each student individually and take time for other students to understand each other as well. Building trust is so important, and as teachers, we need to be someone who cares deeply. Each student has a story and a future that should be highlighted.

Additionally, the course shared tips for developing intersectionality practices & awareness in a CS classroom. For instance, educators need to be curious and see differences as assets, as demonstrated by encouraging the use of multiple languages by allowing students to respond in their native language. Educators also need to give students visibility, so they don't have to fight to be seen. Additionally, they should engage in conversations about intersectionality, privilege, and oppression, this involves creating a safe space to talk and enables self-awareness, empathy, and rich self-expression.

A portion of the course, *CS Teachers Speak: Teaching Beyond CS Concepts*, highlighted teachers' own struggles through the education system. Access to transportation and food was a real reality for many. Many of them failed classes and questioned their ability to succeed. The term ANTs (Automatic Negative Thoughts) allowed for fortune telling in negative outcomes, negative labeling, and catastrophizing the worst possible outcome, all of which we need to combat.

The Cycle of Oppression is broken down into six parts: fear of difference, stereotype, prejudice, discrimination, institutional oppression, and internalized oppression.

In teachers' words, the following is a summary of how each term can be described:

- Fear of difference
    - Being weary of the unknown or unfamiliar, leading to a fight, flight, or freeze response
    - Privilege people can be in a bubble and don't have the full picture

- Stereotype
    - A deeply held belief about a person based on real or perceived group membership
    - Someone is always watching with suspicion in crime or black people

- Prejudice
    - Positive or negative value personally assigned to traits and thus a larger group of people based on limited knowledge
    - Latinos as not seen academically strong

- Discrimination
    - An action taken by an individual for or against another person based on a group they're perceived as belonging to.
    - Bad experiences that people try to fight but can't win so don't do the battle anymore

- Institutional Oppression
    - An official or unofficial act a group takes against another group of people based on stereotype
    - Had to deal with people asking about being in a gang because of their tattoos

- Internalized Oppression
    - When a person believes and/or acts out the oppressive stereotypes created about them.
    - African women not wearing their natural hair out

The end of the course explored diverse perspectives on race by listening to conversations about race from Latinos, Native Americans, African Americans, White Americans, and Asian Americans. Each of these groups touched on their own unique perspective, how race has shown up in their lives and how it has impacted them. For instance: Latinos being assumed that they are illegals, Natives being treated like animals (blood quantum monitoring), Blacks feeling like being hunted, and Asians wanting to feel invisible and assimilate**.** The final sentiment holds personal resonance, as it mirrors the shared lived experiences of Sikhs.

The Coursera session provided invaluable insight into detailed identity inclusion in the classroom setting. There were multiple step-by-step guides towards implementing specific activities or classroom norms. I gained access to external resources such as lesson plans, podcasts, and research papers that aided my engagement.

However, as pertaining to the problem addressed in this thesis, this course covers a small portion in providing the necessary background for progressing into a proper proposal. As the research gathering process matured, the question emerged as to how we can incorporate some of the key lessons in the community environment and involve not just the students but the parents and caretakers.

3.4 *Increasing Access to College* Book

"Increasing Access to College" by William G. Tierney is a comprehensive exploration of the challenges and opportunities associated with enhancing higher education accessibility for underrepresented and disadvantaged populations [7]. The book delves into the systemic barriers that hinder equitable access to college and offers insights into effective strategies and interventions that can dismantle these barriers. Drawing on extensive research and case studies, Tierney examines the role of policy, financial aid, community outreach, and institutional collaboration in fostering inclusivity in higher education. By addressing issues of affordability, information dissemination, and support structures, the book provides a roadmap for policymakers, educators, and advocates to create a more accessible and equitable landscape for aspiring college students, thereby contributing to social mobility and broader societal progress.

The concept of "cultural capital" plays a crucial role in discussions surrounding access to higher education, particularly in the context of increasing equity and inclusivity. Cultural capital, a term popularized by sociologist Pierre Bourdieu [8], refers to the collection of knowledge, skills, behaviors, and experiences that an individual acquires through their upbringing, social environment, and cultural background. It encompasses both explicit and tacit knowledge that can significantly impact a person's ability to navigate social institutions like education.

The idea of cultural capital came up throughout my background research and came up again in an interview. An interview was conducted with one of the people in the Allen School Undergraduate Diversity & Access Team, who is also in charge of the Allen School Scholars Program. The Allen School Scholars Program (Allen Scholars) is a one-year cohort-based program for emerging leaders from first-generation, low-income, and underserved communities from Washington State who are pursuing a degree in Computer Science or Computer Engineering. In this interview, she explained how she got involved in helping under-resourced communities. One of the articles she read, in her time doing her Master of Education at Seattle University, was *Whose culture has capital? A critical race theory discussion of community cultural wealth* by Tara J. Yosso [9]**.** This article highlighted the need for educators to view students from communities of color as full of cultural wealth and not deficient in resources that we must mold them into the traditional idea of wealth. This paper was probably the most insightful out of all the papers, as it enforced the idea of respecting the wealth of all communities, a concept that became a core value of this work as we moved forward.

3.4.1 The Importance of Understanding Cultural Capital

The article examines the concept of cultural capital that was brought up in "*Increasing Access to College*" through the lens of critical race theory and its implications for education. It highlights that Pierre Bourdieu argued that knowledge possessed by privileged classes acts as valuable capital in society, enabling social mobility through formal schooling. However, students of color (POCs) often lack this cultural capital, resulting in a need for schools to address the knowledge, social skills, and abilities they lack due to their race and class backgrounds.

Yosso challenges the assumption that Students of Color are deficient in cultural knowledge. Instead, she introduces the idea of "community cultural wealth," which is a multi-dimensional concept that counters deficit thinking. The article delves into critical race theory in education, emphasizing its focus on recognizing and eliminating racism as well as its origins in response to the limitations of the Critical Legal Studies movement.

The author presents five tenets of critical race theory by Mari Matsuda, which should guide theory, research, pedagogy, curriculum, and policy in education. These include acknowledging the intercentricity of race and racism, challenging dominant ideology, advocating for social justice, valuing experiential knowledge, and employing interdisciplinary approaches.

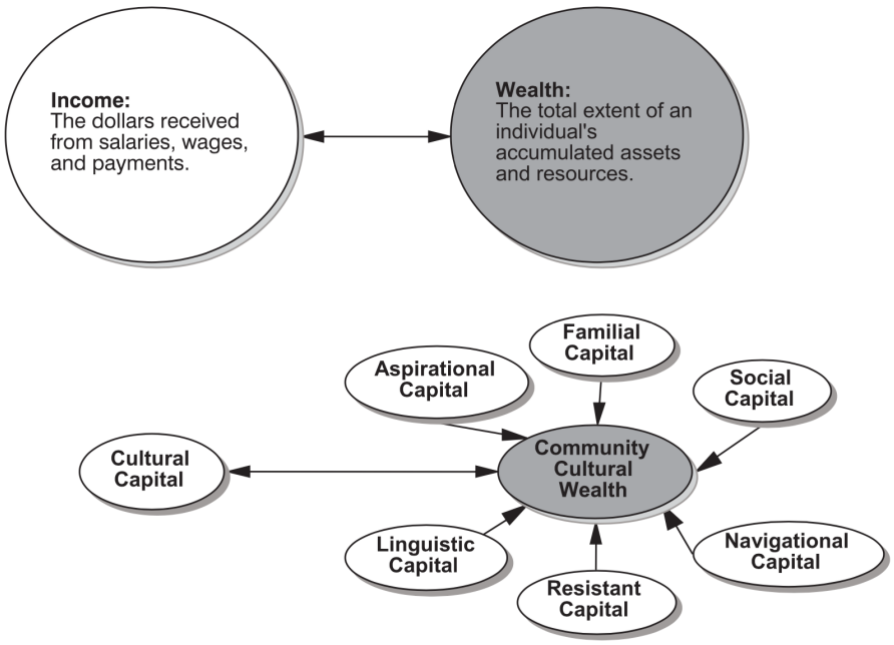


Figure 2. A model of community cultural wealth. Adapted from: Oliver & Shapiro, 1995

The prevalent form of contemporary racism in US schools is deficit thinking, which attributes poor academic performance to minority students and their families. CRT suggests that Communities of Color possess various forms of capital that nurture and empower them. For instance, aspirational capital allows individuals to maintain hopes and dreams despite barriers. Linguistic capital arises from bilingual experiences and storytelling traditions. Familial capital encompasses community history and well-being, and social capital involves networks and community resources. Navigational capital relates to maneuvering through institutions, often not designed with Communities of Color in mind. Finally, resistant capital is developed through oppositional behavior against inequality.

The article argues that CRT shifts the perspective from viewing Communities of Color as culturally deficient to recognizing and learning from their cultural assets and wealth.

3.5 *Roadmap to Mental Health, Navigating the System in Puget Sound* Book

"*Roadmap to Mental Health: Navigating the System in Puget Sound*" [10] is a guidebook created by National Alliance on Mental Illness (NAMI). Seattle that serves as a comprehensive resource for individuals and families seeking to navigate the mental health support system in the Puget Sound region. The book offers a detailed and practical overview of the various mental health services, resources, and pathways available to individuals living with mental health challenges.

One of the central themes of the guidebook is empowering individuals and families to become advocates for their own mental health needs. It equips them with the knowledge and tools necessary to navigate the often complex United States mental health system. The guidebook likely includes practical advice on how to find appropriate care providers, understand insurance coverage, access crisis services, and engage in effective communication with healthcare professionals. "Roadmap to Mental Health" also highlights the significance of community resources and support networks. It

could offer insights into local organizations, support groups, and helplines that can provide assistance, understanding, and connection for those dealing with mental health challenges.

3.6 *Multicultural Competence in Student Affairs: Advancing Social Justice and Inclusion* Book

The second edition of "*Multicultural Competence in Student Affairs: Advancing Social Justice and Inclusion*" authored by Raechele L. Pope, Amy L. Reynolds, and John A. Mueller [11], presents a comprehensive examination of the vital role that multicultural competence plays in fostering social justice and inclusion within the realm of student affairs in higher education. This book provides an insightful framework for educators, administrators, and practitioners to cultivate the necessary skills, knowledge, and attitudes needed to navigate the diverse and evolving landscape of student interactions and campus environments. The authors delve deeply into the principles of multicultural competence, emphasizing its significance in creating equitable and inclusive spaces where students from various backgrounds can thrive. Through a blend of theoretical insights, practical examples, and case studies, the book highlights the importance of self-awareness, cultural humility, and interpersonal skills in fostering meaningful connections with students from diverse backgrounds. Key themes addressed in the book include:

Understanding Multiculturalism: The authors explore the theoretical underpinnings of multicultural competence and the various dimensions of diversity, such as race, ethnicity, gender, sexual orientation, socioeconomic status, and more.

Cultivating Cultural Competence: The book provides strategies and tools to develop cultural competence among student affairs professionals, emphasizing the need for continuous self-reflection, education, and engagement with diverse perspectives.

Intersectionality: The authors emphasize the importance of recognizing and addressing the intersections of various identities and experiences that students bring to campus, helping practitioners navigate the complexities of individual identities and social structures.

Inclusive Programming: The book offers practical guidance on designing and implementing programs, services, and policies that promote social justice, inclusivity, and equity for all students.

Challenges and Opportunities: Through case studies and real-world examples, the authors examine challenges student affairs professionals may encounter when striving for social justice and inclusion. They also highlight opportunities for growth and collaboration.

Collaboration and Allyship: The authors underscore the significance of collaboration and allyship across departments and among colleagues to collectively advance social justice efforts and create a more inclusive campus community.

3.7 SIGCSE Conference 2023

The SIGCSE Technical Symposium addresses problems common among educators working to develop, implement and/or evaluate computing programs, curricula, and courses [12]. There were

two important events, which helped drive this work into a more informed direction. The first was the closing keynote speaker, Nicole Pinkard and the second was the Hispanic BOF session.

Nicole Pinkard presented a talk on *Opportunity Landscape: Infrastructuring Healthy Learning Communities to Power Positive STEM Futures* [13]. Pinkard is the Alice Hamilton Professor of Education of Social Policy and Faculty Director at the Office Community Education Partnerships at Northwestern University. She is also the founder of Digital Youth Network and CitiesLearn, a social learning platform that connects youth's learning opportunities across the school, home, community, and beyond. She is currently working on the design and use of socio-technical systems to support communities in designing healthy and joyful learning opportunities that all families in integrating STEAM into their learning and leisure lifestyles. During her talk, she discussed her project in Chicago, and how that redlining in the 1930s funneled money and resources away from POC communities in the name of "better investment". Even today, boundaries such as Wards school district continue to be drawn in ways that can fracture communities. She emphasized the need to create a more equitable landscape for learning science, technology, engineering, arts, mathematics, and sports (STEAMS) by giving agency to communities to change their landscapes to serve their needs. She discussed the concept of opportunity landscaping as a hyperlocal ecosystem approach to supporting communities in visualizing and tuning their learning infrastructure to provide the learning places, spaces, resources, caring adults, and peers to nurture healthy STEM identities and lifestyles for youth and families living in historically disinvested communities. Overall, Pinkard's work really highlighted that this is a systemic problem that is not easily tackled with one solution. .

Although the initial goal of this thesis work is to help students understand the learning opportunities, Pinkard's compendium of work guided the realization that we need to assist the parents or guardians in the home in understanding how to help their child. It also emphasized that the home environment is just one learning environment, there is the school and public spaces as well. Many of the issues highlighted by her were echoed in the teacher interviews conducted, particularly the concept that teachers focus on their students in the confines of their classroom, but not enough focus is put outside of the classroom and also in areas other than just education such as social work or public transportation, etc.

Another invaluable part of the SIGCSE Conference was the Hispanic BOF (Birds of a Feather) Session. A Birds of a Feather (BoF) provides an environment for researchers and practitioners with similar interests to meet for informal discussions. The participants in this BOF discussed having a more Hispanic-oriented CS Organization, looking at TAPIA 2023 as a way to help Hispanics find a larger community or like-minded individuals. Some things to work on with our students are providing more hands-on information and bringing students together for community, and problems like not feeling like they belong, or imposter syndrome was really common. The group also talked about how to support specifically undocumented students, such as having a course for how to start a business in Fiver or YouTube that is more technical and more supported in career development.

3.8 Librarian-picked-out Research Articles

There appears to be sparse research on how to help under-resourced students inside and outside the classroom in a culturally authentic manner. Even with the assistance of the University of

Washington library system, we found there were only a handful of papers that were relevant to this area and were current. This included a thesis on *A Case Study on Urban Secondary School Teachers' Perspectives on Cultural Responsiveness* [16]*, The Community Teacher: How Can We Radically Reimagine Power Relations in Teacher Development?* [14], and a PowerPoint on *Culturally Engaging and Validating Strategies to Support BIPOC Students at PSU* [15].

The *Case Study* thesis outlines ten essential guidelines for supporting historically underrepresented students in the field of science. These guidelines address barriers such as racism, sexism, discrimination, ableism, socioeconomic disparity, and exclusionary learning environments. The focus is on pedagogical strategies applicable in university and school settings.

1. *Teach with Empathy*: Utilize affirming language and create safe spaces, fostering learning environments rooted in cultural responsiveness. Establish personal connections through sharing stories and understanding individual student needs.

2. I*mplement Student-Centered Learning*: Shift instruction focus to students' preferences and learning approaches, granting freedom of choice and employing low-risk assessments to prevent academic setbacks.

3. *Facilitate Student Empowerment:* Counter feelings of exclusion by using values affirmation and promoting self-advocacy. Reduce power imbalances between teacher and student, with follow-ups and one-on-one discussions.

4. *Diversify Scientific Perspectives*: Counter biases by teaching content through diverse lenses, adopting culturally mediated teaching styles, and using varied approaches to enhance knowledge transfer.

5. *Reduce Financial Barriers*: Shift perspective from deficit to asset-based for financially constrained students. Adapt coursework to accommodate work schedules and ensure access to resources like open-source software.

6. *Advocate for Accessibility*: Create accessible learning environments for students with disabilities. Employ universal design principles, discuss accessibility concerns, and guide students in navigating institutional systems.

7. *Connect Students with Resources*: Assist historically underrepresented students in accessing resources like financial aid, research opportunities, and equity-focused events, alleviating the burden of searching for such support.

8. *Facilitate Informal Education Access*: Integrate informal learning environments into the curriculum, considering socioeconomic factors affecting participation. Employ digital resources and websites to enhance access.

9. *Integrate Community*: Acknowledge and incorporate altruistic cultural values of historically underrepresented students' communities. Foster an inclusive approach that draws on students' cultural knowledge and experiences.

10. *Commit to Ongoing Education and Accountability*: Stay informed about global events affecting students' well-being and normalize difficult conversations like microaggressions. Engage in ongoing education and promote a collective understanding of inclusiveness.

The *Culturally Engaging* article focuses on the challenge educators face in developing culturally responsive relationships with students, particularly those from diverse backgrounds who may struggle with issues like food, housing, and health insecurity. The student-to-counselor ratio is higher than recommended. The training process involves two steps:

1. *Self-Reflection and Cultural Awareness***:** Educators are encouraged to explore their own backgrounds, biases, and blind spots. Networking and collaboration with students and families are crucial for relationship-building. Activities like "The Name Activity" help build trust and background knowledge, as participants share the significance of their names and personal identity. Sharing "Cultural Artifacts" fosters connections and appreciation among educators. Cultural Awareness Interviews enhance understanding of diverse perspectives.

2. *Gaining Community Knowledge***:** Educators are advised to conduct a "Community Resource Analysis" to map community needs and resources. Visiting communities and considering strengths, weaknesses, and vulnerable populations are important. Beyond-school resources like social service agencies and religious organizations should be explored. Visits to community organizations establish personal contacts and provide real-world insights. Inviting community members to the classroom fosters relatability for students. Below in Table 2 is a collection of questions the author suggested when conducting a Community Resource Analysis. Some of these questions formed the basis for survey questions for student interviews and workshop study interviews.

Suggested Questions for Conducting Community Resource Analysis
1. What demographic shifts have occurred? 2. What tensions or opportunities have resulted from these shifts? 3. What are the primary businesses in the area? 4. Who do these cater to? 5. What languages and cultures are represented? 6. Are there low-income housing options? 7. Where are these concentrated? 8. Are there public transportation options? 9. What services are available for homeless or unemployed residents? 10. What are the primary sources of employment? 11. Does the area appear safe, clean, and well-kept? 12. Are there sections that are more run down than others? If so, who lives in these areas? Are there green spaces? 13. Who uses these? 14. Where do people congregate to relax, shop, and exchange information?

Table 2: Questions that were used to conduct community resource analysis

3.9 Adelante Con Educacion (ACE) Conference

The Adelante Con Educacion (ACE) Conference, held on May 12, 2023, welcomed over 100 students from across Washington State. This event provided a platform for participants to engage with higher education and explore the University of Washington (UW) campus. The attendees, predominantly composed of youth from Latinx immigrant families, lack familial exposure to higher education, making the conference a crucial opportunity. The program encompassed valuable insights into financial aid, the application process, and UW's academic offerings. Additionally, the conference served as a forum to delve into issues impacting the Chicanx community.

Hosted by MEChA (Movimiento Estudiantil Chicano de Aztlán), a student organization established in the late 1960s, the event was designed to champion the rights and interests of Chicano and Latino students in the United States. MEChA's mission encompasses advancing higher education, preserving cultural heritage, addressing disparities, and fostering awareness of pertinent social and political concerns within these communities.

The conference featured four comprehensive workshops: Financial Aid, UW Application (Personal Statement), How to be a Baddie, and College 101. Alongside these sessions, cultural performances enriched the experience, and a guided campus tour allowed participants to familiarize themselves with the environment. The event concluded on a vibrant note with a collective dance performance.

My involvement in the conference was multifaceted, including participation as a member of MECHA, contribution to workshop development and conference planning, event photography, and mentorship for 15 Latinx high school students. This immersive experience provided valuable insights into effective workshop facilitation, fostering student engagement, and personalizing outreach strategies to spark interest in higher education, drawing upon my own standout experiences and programming projects.

4 Interviews

One of the most important methods I used to understand the current atmosphere in computing education towards low resources communities around the Seattle metropolitan area was through conducting in-person or online interviews with various stakeholders, including teachers, students, university outreach members, counselors, administrators, and parents. Each interview informed me with some insight into the education landscape, so let's go over a rundown of all the interviews. The template for the interview questions is provided in Appendix A .

4.1 High School Faculty

4.1.1 Auburn Mountainview High School Computer Science Teacher:

The teacher suggests introducing more powerful computers for students to use and take home that are more powerful than Chromebooks with an IDE, but only Code.org (not jGrasp). There is also a lack of computer literacy, and the teacher is incorporating intensive translanguaging and identity. Teachers use Google Translate, but there is a need for diversity in teachers. Software Engineers don't have a good idea as to how to teach students, and there are huge issues with students that have to take care of siblings, work, or family. The goal is to support their family and need to employ the people in some internship. Access to the internet still varies, and poorer students have trouble passing the state standardized tests. Underserved students are often being recycled through the same STEM classes. The teacher recommends the TEALS program. There is also an impact of social media, which is negative to student learning. Parents are a large part of a student's learning, and they don't know how to navigate school and need to advocate for their education. There is a need to fill Titled forms for food or AP tests, but some parents don't show up for parent/teacher conferences or reply to emails. Teachers need parents' input and to bring community leaders to the school for STEM fairs and field trips. There is also a problem with AP classes centered on one score, and there is a mindset barrier that CS is too hard. The teacher believes that there is a need to push for more options for college like community college, and a ton of companies also have upward movement and can pay for your education. The teacher suggests an apprenticeship and bringing students together to form some kind of community to bond and grow, kind of like a Startup. There is a need to expose students to how CS is everywhere, but a lot of kids don't have parents with them, and there is a transportation issue. Students are studying for the A and not for their learning, and AVID schools are suggested. The teacher also recommends school visits to college. COVID had a big impact on how students perceive technology and motivation to focus.

4.1.1.1 AP CS Principles Class Observation

AP CS Principles is a college-level course designed to introduce students to the fundamental concepts of computer science. The course aims to develop computational thinking skills and help students understand how computing technology impacts society. It covers topics such as algorithms, programming, data analysis, the impact of computing on society, and creative problem-solving.

The teacher I interviewed teaches this course and I was able to observe one of the classes. During the observation, several key observations were made. Firstly, students were noted to be using their phones to play games during class, indicating some level of distraction. The teacher presented a worksheet problem involving string manipulation on the board, engaging students in problem-solving. A portion of students at the back of the class appeared disengaged and inattentive, while the teacher's strategies seemed more effective on one side of the classroom.

The class displayed diversity, with a mix of African American, Latino, and female students among the 12 total students. Classroom technology was evident with Dell monitors for all students, although a few computers were malfunctioning. The teacher introduced the concept of substrings using the Sleep Profile app on Code.org.

Various teaching methods were employed, including discussions on the AP Principles Exam and plagiarism, using flowcharts and projectors to teach concepts. The teacher accommodated student needs, permitting a restroom break with a phone and managing a student returning late to class.

Several instances of student participation were observed, including an active white male student engaging in discussions, a late-arriving Latino girl answering a question, and some students struggling to keep up. Despite active learning activities like discussing edge cases and identifying bugs, there were students playing games or using phones during instruction. The teacher displayed answers to aid students falling behind.

The AP Principles class demonstrated a combination of engaged and disengaged students, diverse participation, and effective technology utilization for instruction. The teacher employed varied teaching strategies, but some challenges were evident in maintaining consistent student engagement and progression throughout the lesson.

4.1.2 Renton Hazen High School Career Technical Education (CTE) Teacher:

The teacher suggests starting more robust CS/CTE in elementary schools and middle schools with a passion approach, allowing students to use CS as a tool to solve a problem they are interested in. Students shouldn't be forced, and it would also be interdisciplinary. The teacher recommends teaching students to be creators and not consumers. The teacher suggests creating a STEM bus that has a bunch of cool technology and bringing food for elementary, middle, high school to the neighborhoods. The teacher suggests getting people excited about technology and hosting events/booths at Latinx or African American hot spots with food and activities. The teacher discusses the barriers with CTE/CS state requirements and having a lack of funding or resources in teachers or oversight at higher levels. There is a lack of equity for students, and there is a tendency toward equality. The teacher suggests that problem-solving is not just CS; it's English, math, history, and art. The teacher recommends connecting with technology giants to help sponsor education. Renton partners with Boeing for Aerospace classes/internships.

4.1.3 Auburn Riverside High School Career Counselor:

The Auburn Riverside Career Counselor discusses the importance of family interactions in terms of mental health and counseling. The counselor suggests that filling out FAFSA applications can be challenging, and it's important to have all the necessary information before starting (20-30 min). Family situations and environments can complicate things, and there is a need for a WASFA for undocumented students. College applications are also discussed, with GPA being crucial, along with personal statements. There is a mindset that college is too expensive, and it's impossible to attend. To overcome these issues, three full-time staff members are needed, with individuals who know multiple languages to reach out to families.

4.1.4 Auburn School District Office:

The Auburn District Office suggests that human capital is needed to address student attendance issues. Translanguaging is more necessary than ever, and there is a need for faculty retention in special education, TEALS, and computer science.

4.2 College / University Faculty

4.2.1 Ethnic Cultural Center (ECC) Assistant Director at the University of Washington:

The ECC Director suggests that programs need to focus on what the community needs, and it changes each year. Some examples of what the community may need include mental health and loneliness support, self-defense classes, and help with imposter syndrome, motivation, and time management. The director also recommends having a multicultural outreach and recruitment team at universities to encourage underrepresented groups to pursue education.

4.2.2 Pathways for Inclusive Excellence:

Pathways for Inclusive Excellence (PIE) at the University of Washington (UW) provides specialized curriculum and individualized support for talented students who need additional STEM and college preparation before they begin their engineering or computer science career. There are three programs: the Engineering Dean's Scholars (EDS) , the Allen School Scholars Program (ASSP), and the State Academic Redshirt Students (STARS) Program [17, 18, 19]. The EDS program is a one-year program aimed at providing students with a strong first-year foundation in the College of Engineering and the UW. For students who select an engineering major (not including computer engineering) as their first choice on their UW freshman application. ASSP is a one-year program aimed at providing students with a strong first-year foundation in the Paul G. Allen School of Computer Science & Engineering (Allen School) and the UW. For students who select computer science or computer engineering as their first choice major on their UW freshman application. The STARS program is a two-year program designed to holistically support students to strengthen academic preparation and develop professional skills while they work through their STEM pre-requisite courses. For students who select engineering or computer science as their first choice major on their UW freshman application.

These three programs are related to my thesis as a majority of the students enrolled are underrepresented and from under-resourced communities and understanding what they do can inform how to help students not already at college but in high school.

4.2.2.1 Allen School Scholars Program Director at the University of Washington:

The director for ASSP discussed learning how to study and problem solve, as well as understanding students' whole experience that can impact their learning. For example, students who cannot come to the university to study and access important resources and have to stay home to help their family may struggle with their studies. She stated that therapy is essential, and it's important to show students that you genuinely care. Additionally, she said that time management is also crucial.

4.2.2.2 Washington State Academic RedShirt (STARS) Program Director:

The STARS Director emphasizes the need for discipline, soft skills, and self-care. The director also suggests that students need to prioritize self-care and schedule it on their calendars and imposter syndrome is also discussed.

4.2.2.3 Engineering Dean's Scholars Program Lead:

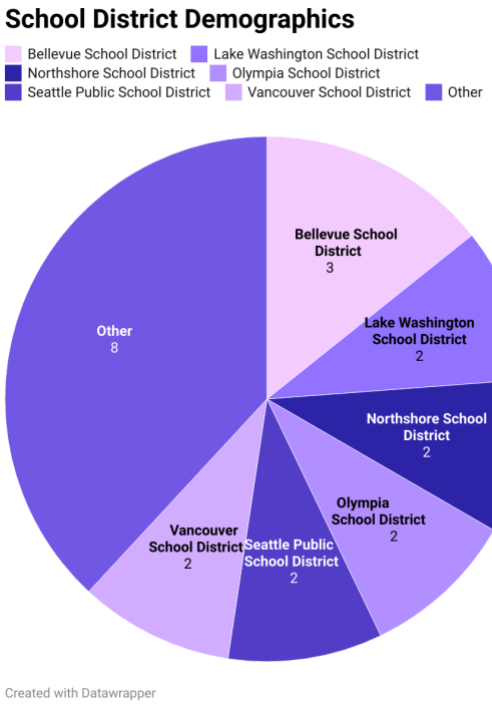
The lead from EDS comes from an American Indian Studies background, and he emphasized the need to start the cycle of bringing students from underrepresented communities to the university and graduating them so that they can go back and help their communities and families. Conversational learning is essential, and technology needs to be examined to see what perspectives are not included. It is also essential to acknowledge community knowledge and not assimilate it, and cultural code-switching is important.

4.3 Students

4.3.1 Student Surveys / Interviews

Interviews were conducted with current University of Washington students in the Computer Science department in order to learn more about different students' experiences going through school before coming to college. Many of the students were from minority backgrounds or from under-resourced communities. The questions were related to family environment, school environment, college, and several disagree/agree statements pertaining to experiences in high school and college. The full list of questions is provided in Appendix B. There was an option to agree to a further interview to get additional personal insight into the student's experience.

4.3.2 Survey Results



The participants in the "Other" category are from these districts: Camos, Granite, Highland, Issaquah, Tacoma, Waterloo, and Central Kitsap, with one person who went to high school in Malaysia.

High school was a challenging experience for many of the students. One student, a person of color in a predominantly white school, felt disconnected, while another struggled with a learning disability without much support. Another student had a setback due to a car accident and lacked social support. Additionally, spending time on Tumblr reading blogs that encouraged self-harm, anorexia, and substance abuse was a problem for another student. Problems at home also affected some students' abilities to concentrate, including a father with Parkinson's disease, domestic violence, and financial struggles.

Many students faced barriers in high school, including homophobia, transphobia, and racism from both faculty and students. Some had to drop classes due to a lack of support from teachers, and others felt isolated and lacked community. Language barriers also affected immigrant students. Students wished for more flexibility and connectedness between running start and high school, a ride-sharing program, better substance abuse programming, high school jobs with safe environments, and college and career support from better counselors.

When applying to colleges, some students faced hurdles due to a lack of guidance from parents and faculty or not thinking they were good enough. In college, resources varied across majors, and computer science students were not always friendly. One student felt more unsupported in college and faced domestic violence, suicide, and self-harm. However, the academic rigor was higher in college compared to high school.

The pandemic had a negative impact on some students' motivation to learn. While school pushed STEM classes, students wished that teachers would connect with them on an individual level and recognize their identity. Some students deal with imposter syndrome from time to time, and they may have some trouble solving problems in college. Additionally, some feel guilty for not being able to go home and help their family.

4.3.3 Interview Highlights

The student interviews at Lincoln High School in Tacoma Public School District revealed that students faced challenges such as lack of academic motivation among peers, limited financial resources for sports and transportation, fights in the school, inadequate computer access for everyone, and unhelpful and overburdened counselors. Additionally, some students had family issues, struggled with imposter syndrome, and engaged in translanguaging.

At Mariner High School in Mukilteo School District, students were heavily involved in APs, band, clubs, and tutoring, but faced challenges such as limited class options, over-policing, and a school shooting. Many students were low-income and had to work outside of school, and counselors focused mainly on helping students graduate high school, rather than preparing for college. Students also faced underestimation from their teachers and had to figure out college applications on their own.

The interviewee from Rogers High School in Puyallup School District didn't initially think they would get into a CS program, but eventually received merit-based scholarships. They didn't like being mentored.

The student, who attended Federal Way, Thomas Jefferson High School, and Garfield High School in Seattle, had to work hard to do well in school after coming from East Africa. They faced challenges such as limited class options in CS, not being allowed to take desired AP classes, and experiencing racism as the only black student in the classroom.

The interviews reveal a common thread of challenges and resilience. Students faced issues such as limited resources, inadequate support, and bias, yet many engaged passionately in extracurriculars and academics. Overcoming obstacles like restricted class options, financial constraints, and discrimination, these students demonstrated remarkable determination. The interviews emphasize the need for comprehensive support systems, equitable opportunities, and culturally sensitive education to foster success for all students.

4.4 The Need for a Multifaceted Approach

The tripartite interviews encompassing students, individuals within the students' high school circles, and those within their college circles have yielded valuable insights that collectively underscore the necessity for a multifaceted approach in shaping the forthcoming pilot study. These distinct perspectives contribute nuanced considerations that highlight the complexity of challenges faced by students hailing from under-resourced communities. The rationale for adopting a series of workshops, as opposed to a singular intervention, becomes evident when scrutinizing these varied viewpoints.

1. Students' Perspectives (High School and College): Through conversations with students, it becomes apparent that a wide spectrum of impediments characterizes their educational journey. These challenges encompass issues of resource scarcity, familial dynamics, racial bias, diminished self-esteem, and imposter syndrome. Given the diverse nature of these obstacles, it becomes evident that a solitary workshop would not suffice in addressing such intricate and multifaceted concerns. Rather, a sequenced series of workshops can facilitate a targeted and phased approach, enabling a comprehensive exploration of each challenge and its potential solutions.

2. High School Circle Perspectives (Teachers, Counselors, CTE Staff): The insights garnered from educational practitioners including teachers, counselors, and Career Technical Education (CTE) staff accentuate the need for tailored strategies. The proposal to integrate translanguaging techniques, to foster interdisciplinary and passion-driven learning, and to provide support for computer literacy underscores the need for a nuanced and multi-pronged approach. By delivering a suite of workshops, each aligned with the specific concerns raised by these professionals, a more comprehensive intervention can be realized. This approach is crucial to effectively address diverse needs within the student body.

3. College Circle Perspectives (University Staff, Student Programs):** Perspectives shared by university staff members and specialized programs, such as Pathways for Inclusive Excellence (PIE), offer insight into the college transition experience. Their emphasis on holistic support, self-care, and tackling imposter syndrome underlines the particular challenges that students encounter as they embark on higher education. To address these transitional hurdles, a series of workshops can be devised to guide students through the

academic, emotional, and social shifts inherent to college life. By offering a continuum of support, students' success trajectories can be significantly bolstered.

The interviews conducted with these three distinct stakeholder groups illuminate the intricate web of challenges that students from under-resourced communities confront. The complexities arising from these challenges warrant a multifaceted approach that comprises a sequence of workshops, each meticulously crafted to cater to the distinct challenges outlined by the various perspectives. By adopting such an approach, the pilot study can provide a responsive, well-calibrated, and holistic framework that addresses the array of hurdles faced by these students, ultimately fostering their academic success and personal growth.

Indeed, while the multifaceted approach gleaned from the interviews offers a comprehensive strategy for addressing the challenges faced by students from under-resourced communities, it is prudent to acknowledge that crafting a full-fledged pilot study that fully encompasses all the nuanced perspectives could potentially exceed the scope of this current thesis endeavor. The multifaceted nature of the challenges, as illuminated by the three distinct stakeholder viewpoints, necessitates a level of depth and intricacy that might extend beyond the confines of the current research timeline.

Given this realization, it becomes imperative to exercise judicious decision-making in order to create an intervention that is both meaningful and feasible within the stipulated thesis framework. The subsequent section will delve into additional considerations, culminating in a series of individual proposals that are more manageable in scope, yet retain the essence of the multifaceted approach. These proposals, while focusing on distinct aspects such as academic support, community engagement, and mental well-being, are devised to align with the core issues illuminated by the diverse stakeholder perspectives.

However, it is essential to underscore that while the forthcoming section delineates pragmatic interventions suited to the thesis timeline, the full multifaceted approach remains a lodestar for comprehensive educational reform. The multifaceted approach symbolizes a commitment to addressing the intricate amalgamation of barriers faced by students, acknowledging their diverse needs, and striving for equitable academic environments. While individual proposals presented later are a pragmatic response to limitations, they emanate from the broader philosophy of inclusivity and holistic empowerment.

5 Workshop Creation

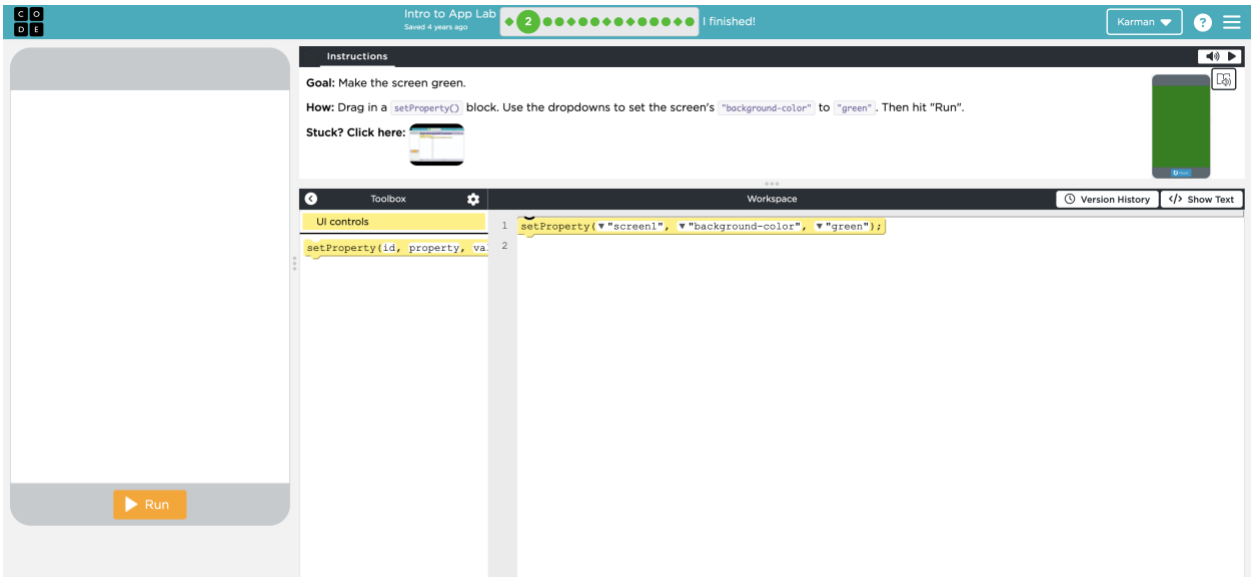
5.1 Considerations as a Computer Science Student

This work began as a way to introduce a basic level of computer science to the students in the schools and districts targeted.

The challenge of bringing a computer science program to high school students from underserved and underrepresented backgrounds is difficult to overcome. From the AP CS Principles class observation, we can see that a lot of students were disinterested in learning. This course has a

population of students that self-selected for an AP course and like the idea of programming enough to enroll. This course is also a year-long class that allows room for students to learn at a slower pace and take extra time to learn more difficult concepts. However, these are not the students we aimed to serve with our workshops. The students we are aiming to help are ones that are more likely to be disengaged from all classes in high school, from high schools not as well-resourced (such as Auburn Mountainview). Based on the pedagogical goals, aligning our curriculum as a maximum 6 hour long workshop over 2 weeks' time seemed to make the most sense. This also works with the researcher's availability.

The best option for including a computer science-themed program would be using a program like App Lab [20]. App Lab is a programming environment where you can make simple apps. In this environment, you can design an app, code in JavaScript with either blocks or text and then share your app with others. This program is targeted at ages 13 and up and in English only. The user experience is shown below:



It is great for students who already have been exposed to programming concepts or following along in a long-form course in a classroom. It, unfortunately, has too high of a learning curve to give out to students of these workshops given the time constraints.

We also reviewed various programming workshops with current UW students from these underserved communities and while they were enthusiastic about the content, they shared concerns about students not even being engaged in basic-level education, let alone computer science programming. This viewpoint was backed by the Ethnic Cultural Center as well as interview testimonies from other computer science teachers from Renton and Auburn school districts.

5.2 Considerations from a Cultural Capital Perspective

The interview with the Undergraduate Diversity & Access Team member, the book on Access to College, the interviews with educators, and the Coursera course all sheds light on the significance of cultural capital and the imperative of embracing a strengths-based perspective.

Thus, the development of workshops specifically tailored to support under-resourced communities, hinges on this foundational understanding of cultural capital. By infusing these principles into the workshop framework, the goal is to create interventions that resonate deeply, promote inclusivity, and honor the unique needs and strengths of the participants. The design process involves a careful consideration of several pivotal aspects.

Foremost, an acute sensitivity to cultural nuances is paramount. Acknowledging and respecting the multifaceted diversity within the community is essential, steering clear of stereotypes and demonstrating an appreciation for the richness embedded within participants' cultural backgrounds. An asset-based approach stands as a guiding principle. Shaping the workshops around the concept of "community cultural wealth" empowers participants by shifting the focus from perceived deficits to the recognition of their myriad strengths, talents, and resources. Collaborative curriculum design ensures authenticity and relevance. By involving community members, educators, and even participants themselves in shaping the workshop content, we ensure its alignment with their lived experiences, needs, and aspirations.

Embedding culturally relevant content throughout the workshops is pivotal. Integrating examples, case studies, and materials that resonate with participants' experiences fosters a meaningful and relatable learning environment. Employing teaching methods that cater to diverse learning styles, from dynamic group discussions and storytelling to interactive role-playing and hands-on activities, fosters active participation and a comprehensive learning journey.

Furthermore, incorporating activities that illuminate and celebrate participants' strengths and cultural assets is pivotal. Sessions dedicated to sharing personal stories, for instance, can illuminate the profound influence of cultural heritage on skills and perspectives. The approach should be all-encompassing, addressing a spectrum of challenges participants might encounter. Topics covered can span academic strategies, financial navigation, cultivating support networks, and nurturing mental well-being.

Facilitating cultural exchange and learning serves as a conduit for fostering an atmosphere of respect and curiosity. Encouraging participants to glean insights from each other's backgrounds enriches the collective learning experience. Leveraging community involvement by engaging local leaders, organizations, and resources enhances the impact, and guest speakers who have triumphed over analogous challenges can offer invaluable insights.

Particularly, nurturing lasting support mechanisms extends the workshop's influence. Providing ongoing resources, mentorship, and avenues for participants to advance their growth fosters a sustained sense of community and empowerment that extends beyond the workshop sessions. By meticulously weaving these principles and considerations into the workshop fabric, participants are poised to derive a profound sense of belonging, empowerment, and renewed motivation. This approach not only honors their cultural capital but also contributes to cultivating an educational landscape characterized by inclusivity, equity, and transformation. This endeavor is envisioned as a dynamic, evolving initiative that responds to participant feedback and evolving needs over time.

5.3 Methods

The enormous amount of background reading and survey results were compiled into a "mood board" of thoughts that were grouped into general proposal ideas. The results were seven key proposals: technology access-focused proposal, identity and translanguaging-focused proposal, involving parents/community in the education process focused proposal, supporting the family-focused proposal, exposure to college/career-focused proposal, computer science / technology passion-focused proposal, effective faculty/counselor training focused proposal.

- *Technology access-focused proposal:* The goal of the technology access-focused proposal was to see how providing students with more powerful computers and access to the Code.org curriculum can improve their computer literacy and overall academic performance.
- *Identity and translanguaging-focused proposal*: With this proposal, we hoped to determine if we can better support the linguistic and cultural identities of students in the computer science classroom.
  Involving parents/community in the education process-focused proposal: The third proposal, which we eventually settled on, looked at if we can better involve parents and community members in the education process to support student success.
- *Supporting the family-focused proposal:* The next proposal looked at the issue of school commitment and providing better support for high school students who have responsibilities outside of school, such as caring for siblings or working to support their families.
- *Exposure to college/career-focused proposal:* Another proposal that I came up with involved exposing high school students to college and career options to increase their likelihood of pursuing higher education.
- *Computer science / technology passion-focused proposal:* The sixth proposal involved engagement through a passion project where students will use computer science as a tool to solve a problem, they are interested in.
- *Effective faculty/counselor training focused proposal:* The final proposal takes a look at improving faculty and counselor training to better support CTE/CS students in meeting state requirements.

These proposals were submitted on January 13 to the 2023 UW Teaching & Learning Symposium, on the UW campus in April 2023. For each of the proposal ideas, I drafted a submission to meet the criteria below:

- Project question: What instructional challenge are you trying to better understand or solve?
- Context: What are the relevant characteristics of your instructional setting: course, type of students, instructional issue, etc.?
- Methods: What methods and/or strategies are you using to explore your research question?
- Impact/Assessment: What is the impact of this project on student learning, and how do you know?
- Application: What can instructors in other disciplines learn from this project and how might your findings be applied in other instructional contexts and disciplines?

The full submission for each proposal is provided in the Appendix C for further reference as well.

5.4 Selected Pilot-Study Overview

Ultimately this work focused on one workshop: Involving parents/community in the education process with some changes and additions from the other proposed workshops. There are a couple of reasons why this workshop was chosen:

1. Multiple computer science teachers in different school districts all mentioned the importance of involving the family in the child's education. They noted that they have been doing the most amount of work in the classroom to keep students engaged and excited to learn. But they mention that parents need to spend time with their children to instill education as a core value.
2. Many parents and families can't come into the school to get a full range of resources from the counselor, teachers, or events hosted due to long work hours, unavailability for other reasons, or lack of importance/trust to the school system.
3. Being raised with a strong appreciation for education by my parents has shaped my current position as a responsible and conscious individual. The significance of schooling in achieving socioeconomic advancement is clear to me, and this workshop could assist parents in imparting similar values to their children. The desire for their child's success is universal among parents; they only require direction in maneuvering through the system [21].
4. Incorporating elements from other workshops can be done more easily given our focus on the parents as they are more likely to absorb a larger range of resources or topics. For instance, the translanguaging instruction (with the help of another college student from the same community, who can communicate in Spanish, for example) could be incorporated from the Identity and Translanguaging focused workshop. This can foster inclusiveness, and familiarity, and start to build trust between us and the families. Conversational learning, where we can all in discussions and activities that promote critical thinking, collaboration, and peer learning could thereby be used. In addition, by sharing our own perspectives and identities and more importantly, allow families to share their own experiences and perspectives so they feel comfortable expressing their identities. From the support of the family and Exposure to College/Career proposals, we can discuss financial aid and walkthrough the actual application process as a workshop alongside educational opportunities and mental health workshops.

The pilot-study program overview is as follows:

> **This research study is being conducted to assess the impact of parents and family members on the student's learning.**
>
> **Parents play an important role in the upbringing of their children in education but oftentimes don't have to resources or knowledge to guide their children more intentionally than already doing so.**
>
> **We will provide you all with three workshops as a collaborative presentation which will all incorporate a translator to facilitate translanguaging in a language you are most comfortable in:**
>
> 1. **Introductions & Identities**
> 2. **Educational Opportunities**
> 3. **Financial Aid**

4. **Mental Health**

At the end of the workshop, there will be time to discuss and explore the next steps or develop a personal plan for your child. After the workshop, there will be some post-workshop survey questions.

Once the study is concluded, there will be post-workshop survey questions to understand the impact of the workshops.

5.5 Workshop Overviews

Below is a description of what each workshop, listed above, entails and a couple of motivations for why we include each workshop, as well as other necessary considerations. The full workshops will be presented in Appendix D along with the links to the PowerPoints itself.

5.5.1 Introductions & Identities Workshop

This workshop is the first and most important workshop to get the family engaged and start building trust between me and them. It will be vital to initially meet the families them in person in their community in order to help quell any uneasiness about having someone else tell what the family or child should do. The job of this workshop is to help form a community and inspire trust. The workshop will include introductions and then we do icebreakers and have all family members share a little bit about themselves. Then the participants will do an identities journal prompt to explore our own unique perspectives and demonstrate that everyone has value in this environment. This was taken as inspiration from one of the CSTA Summer Workshop [22]. Once they have written ideas down, we can all share out our own experiences and the identities. The hope is that if I share why I am leading this workshop by explaining my educational journey and how I want everyone to "climb the same ladder I have climbed." Next, we will discuss the overview of the program and the different workshops we will talk about. We then jump into learning more about the child by discussing their own identities and questions related to their well-being, school performance, and other environments. Finally, we open the stage for a larger discussion for the family to have an open dialogue and further build community and trust.

In a mere introductory workshop, our aspiration is to transcend the roles of strangers and mentors and evolve into a united community bound by shared aspirations for educational growth. Through intentional interactions and insightful activities, we lay the cornerstone for a partnership founded on trust, collaboration, and the common desire for each child to ascend their own unique educational ladder.

5.5.2 Educational Opportunities Workshop

Understanding high school educational opportunities is crucial for under-resourced and first-generation college-bound students as it lays the foundation for their academic and personal growth. These students often face unique challenges due to limited access to resources and lack of familial experience with higher education. Comprehensive knowledge about core academic subjects equips them with essential skills and knowledge, enhancing their preparedness for college-level coursework.

Engaging in extracurricular activities not only enriches their learning but also helps build a well-rounded profile that can stand out on college applications. Internships and work-study programs provide hands-on experience, fostering practical skills and professional connections that can guide their career aspirations. Career and Technical Education (CTE) programs offer a direct pathway to vocational skills, increasing employability and offering an alternative to traditional college routes. Leadership and service opportunities not only bolster their resumes but also instill valuable qualities like teamwork and civic responsibility. A comprehensive understanding of high school opportunities empowers these students to make informed choices, maximize their potential, and pave a successful path toward higher education and future careers.

An integral facet of facilitating students and their families in attaining their ambitions of higher education lies in furnishing an assortment of scholastic prospects during their high school years. In pursuit of this objective, I have meticulously developed an all-encompassing educational opportunities workshop designed to equip parents with the tools and insights to guide their children towards a more enriched high school experience, better preparing them for the challenges of higher education. The envisioned workshop encompasses a structured exploration of the following comprehensive components:

1. *Definition and Rationale of Educational Opportunities*: This segment elucidates the fundamental concept of educational opportunities and its compelling rationale. Attendees will gain a profound understanding of the manifold advantages that educational enrichment during high school can confer upon students, encompassing both academic and personal growth.

2. *Array of Educational Opportunities*: Delving into the diverse panorama of educational opportunities, this module provides a comprehensive overview of the multifaceted avenues through which high school students can engage in activities that foster holistic development. Participants will gain insights into the myriad opportunities that can serve as conduits for enhanced learning and personal growth.

3. *Detailed Exploration of Educational Opportunities*: A pivotal element of the workshop involves a meticulous dissection of the various educational opportunities available to high school students. This includes an in-depth examination of core academic subjects, the significance of extracurricular activities, the transformative potential of internships and work-study programs, the specialized focus of Career & Technical Education (CTE) programs, leadership and service engagements, the rigors of Advanced Placement (AP) courses, and the value of Dual Enrollment Programs in fostering college-level proficiency, as well as alternative pathways including community colleges and Running Start.

4. *Establishment of Supportive Ecosystems*: Recognizing the indispensability of a robust support network, this workshop dedicates a segment to elucidate the systems of support available to students navigating these educational pathways. Participants will be guided on how to identify mentors, advisors, and educational counselors who can offer guidance and encouragement.

5. *Interactive Discussion and Q&A*: In fostering a collaborative and engaging environment, this workshop culminates in a facilitated discussion and question-and-answer session. Attendees

will have the opportunity to exchange insights, voice concerns, and seek clarifications on any aspects of the presented material.

In essence, the proposed educational opportunities workshop embodies a methodical and enlightened approach to fostering scholastic enrichment during high school years. By arming parents with a comprehensive understanding of the diverse educational pathways available to their children, this workshop aims to cultivate an environment of informed decision-making, holistic development, and strategic planning for future collegiate pursuits. By nurturing these insights, parents can play a pivotal role in guiding their children towards a trajectory of educational excellence and personal growth.

5.5.3 Financial Aid Workshop

To help students and their families to succeed well in higher education, we need to show how to pay for it. Many families may not have the financial means to do so on their own, so it is vital to provide a guide to financial aid.

Understanding financial aid is vital for success in higher education for several reasons. Higher education can be expensive, and many students and their families may not have the financial resources to cover the full cost of tuition, fees, books, and living expenses. Financial aid provides the necessary funds to make education more accessible and affordable. Financial aid can alleviate financial stress and allow students to concentrate more on their studies and personal development. It also ensures that education is accessible to a diverse range of students, promoting social mobility and equal opportunities.

A pivotal and intrinsic facet of our commitment to aiding students and their families in achieving their aspirations for higher education lies in the provision of an assortment of strategies aimed at alleviating the substantial financial constraints often associated with college or advanced educational pursuits. Recognizing this imperative, I have developed a comprehensive and immersive financial aid workshop meticulously designed to empower parents with the requisite tools and knowledge to confidently navigate discussions centered around the fiscal dimensions of pursuing higher education. This workshop, designed to instill confidence and clarity, comprehensively traverses the following key components:

1. *Understanding Financial Aid*: Participants will embark on an illuminating journey into the intricate landscape of financial aid, discerning its pivotal significance in fostering accessibility and affordability within the realm of higher education.

2. *Diverse Avenues of Financial Aid: Scholarship, Grant, Loan, and Work-Study Exploration*: Delving deeper, the workshop will delve into the diverse array of financial aid channels available. Attendees will be exposed to an insightful exploration of various financial aid types, including grants, scholarships, loans, and work-study programs.

3. *Navigating the Financial Aid Landscape*: A critical juncture within the workshop involves an exploration of the varied sources from which financial aid can be secured. Attendees will glean insights into the institutions, organizations, and governmental bodies that serve as

sources of financial relief. This segment of the workshop will elucidate the diverse pathways through which individuals can access financial support, empowering attendees with a holistic view of their options.

4. *Unveiling the Distinctions Between WASFA & FAFSA*: In pursuit of comprehensive clarity, the workshop will navigate the nuanced differences between the Washington Application for State Financial Aid (WASFA) and the Free Application for Federal Student Aid (FAFSA).

5. *Guided Application Completion: WASFA and/or FAFSA:* Recognizing the tangible challenges associated with application processes, the workshop will extend hands-on guidance through the completion of the WASFA and/or FAFSA forms. Participants will engage in active learning through a step-by-step walkthrough of the application processes.

6. *Charting the Financial Aid Timeline*: A strategic perspective underpins this segment, wherein attendees will be equipped with insights into the optimal timing of their financial aid applications.

7. *Empowering Next Steps*: A Path Forward: The workshop concludes with a comprehensive elucidation of the subsequent stages after application submission. Attendees will receive guidance on the measures to be taken while awaiting responses and how to proactively address any potential hurdles that may arise.

8. *Supplementary Resources*: Emphasizing ongoing support, participants will be introduced to a curated collection of supplementary resources. These resources encompass a range of tools, organizations, and platforms that serve as repositories of information, ensuring participants' continued access to guidance as they navigate their financial aid journey.

By equipping parents with comprehensive insights, actionable strategies, and hands-on guidance, this workshop aims to foster empowerment, alleviate uncertainties, and catalyze informed decision-making concerning the financial trajectory of collegiate aspirations.

5.5.4 Mental Health Workshop

A crucial aspect of supporting students and their families in their pursuit of higher education is providing a solid foundation in mental health awareness and understanding.

Understanding mental health is vital for success in higher education. It impacts various aspects of a student's academic journey, including academic performance, stress management, productivity and resilience, and interpersonal relationships.

By having a good understanding of mental health, students can effectively manage stress, anxiety, and other mental health challenges that may hinder their ability to focus and perform well academically. Recognizing and addressing their mental health needs allows them to maintain a healthier emotional state, positively influencing their academic performance. Higher education often comes with increased academic demands and social pressures. Understanding mental health equips students with the ability to recognize signs of stress, anxiety, and burnout, enabling them to develop

effective coping strategies. Mental health also influences students' resilience, focus, and productivity. When mental health issues like depression or anxiety arise, it can be challenging to concentrate on their studies and stay motivated. However, by understanding mental health, students can identify signs of declining mental well-being and take proactive steps to address them, fostering a conducive environment for learning and productivity. Furthermore, understanding mental health allows students to recognize signs of distress in themselves and others, promoting empathy and compassion.

To address this need, I have developed an outline for a future comprehensive mental health workshop aimed at equipping parents with the knowledge and skills necessary to assist their children with any mental health challenges they may face during their educational journey. This workshop covers the following key areas:

1. *Introduction to Mental Health*: Participants will gain a clear understanding of what mental health encompasses, including factors such as emotional well-being, stress management, and maintaining a positive mindset.

2. *Importance of Understanding Mental Health*: This section emphasizes the significance of mental health in preparing children for academic success. Participants will learn how mental health impacts various aspects of their child's life and why it is crucial to address these issues proactively.

3. *Identifying Stressors and Agitators*: Parents will be educated on common stressors and factors that can negatively impact their child's mental health, such as academic pressures, social challenges, and life transitions. By recognizing these stressors, parents can provide appropriate support and guidance to their children.

4. *Recognizing Signs of Negative Mental Health*: This workshop segment educates parents about the warning signs and symptoms that indicate deteriorating mental health in their child. By being vigilant, parents can intervene early and seek appropriate assistance for their children.

5. *Strategies for Addressing Mental Health Challenges*: Practical techniques and interventions for managing and resolving various mental health situations will be explored. Parents will learn about available resources and strategies for providing support, including seeking professional help, implementing self-care practices, and fostering open communication within the family.

6. *Healthy and Productive Communication*: Parents will be guided on how to initiate conversations about mental health with their children in a compassionate and productive manner. This section aims to create an environment of trust and understanding, where children feel comfortable discussing their challenges and seeking assistance when needed.

7. *Probing Discussion Questions*: To encourage dialogue and family participation, the workshop will include discussion questions related to specific signs of mental health issues and practical steps for seeking counseling or additional support.

8. *Access to Resources*: Parents will be provided with information about available mental health resources within the school and local community. This includes counseling services, support groups, and other organizations that can assist in addressing mental health concerns.

9. *Developing an Action Plan:* Each family will have the opportunity to create an individualized action plan, tailored to their child's specific needs. This plan will serve as a guide for future reference, outlining proactive measures, potential challenges, and appropriate steps to take when supporting their child's mental health.

I acknowledge here that I, as a computer scientist and educator, lack the expertise and credentials to lead this workshop, I recognize the significance of partnering with a mental health therapist or specialist. Their professional knowledge and experience will enable them to delve into the intricate details of stressors, common signs of worsening mental health, effective problem-solving approaches, and various strategies for engaging with students. This collaboration will ensure that the workshop provides accurate, evidence-based information and practical guidance.

In conducting research to better understand the mental health landscape, particularly in the Puget Sound area, I explored resources such as the Roadmap to Mental Health by the National Alliance on Mental Illness (NAMI), Seattle. This comprehensive resource delves into different mental illnesses, including PTSD, depression, and bipolar disorders, highlighting the process of recovery and appropriate treatment methods. Notably, it emphasizes the crucial role of family support and outlines crisis management strategies. This resource underscores the complexity of mental health and the need for diligent and compassionate care, underscoring the importance of having a trained professional lead the workshop.

6 Discussion

6.1 Future Work

Ultimately, we wanted to obtain institutional review board review (IRB Review) approval to conduct the research appropriately. This required us to provide completed workshops, think through questions about privacy, data storage, and research populations, as well as paperwork for consent and recruitment. This process involved back-and-forth communication with a study representative on Zipline and continued over the course of two months. At that point, it became more and more challenging to finish the IRB process as well as have time to execute the study with recruitment and consent approval by the participants beforehand. Thus, we concluded that it would be more effective focus on the documenting the background research and workshop development done to date. The goal is to conduct the study after the thesis work is completed during the following school year, which would be more convenient for students and families alike. Thus at the present, we don't have concrete qualitative or quantitative results of our study.

Once we execute the workshops and bring back results, I intend to further develop the workshops by integrating the concept of cultural capital more extensively. This will allow for a more seamless and respectful engagement with both families and students, leveraging their existing knowledge and experiences. Additionally, I plan to elevate the mental health proposal from a theoretical framework to a practical workshop by collaborating with a licensed mental health professional. The objective is

to provide students and families with the necessary tools to address their mental well-being effectively. Furthermore, my aspiration is to create an interactive website platform that goes beyond the existing workshops, encompassing a broader range of topics. This platform will incorporate downloadable worksheets, comprehensive guides, and a diverse array of resources to serve as a centralized hub for underserved families seeking guidance and support. To extend the impact of this work, I intend to establish collaborations with school districts directly. This collaboration aims to enhance the educational experience of both students and faculty by integrating the developed material into the school curriculum, ensuring a wider reach and long-term sustainability. Incorporating elements from other proposals, particularly the computer science passion proposal, is also part of my future agenda. Although a challenging endeavor, this workshop offers engaging learning experiences that can ignite students' interest in STEM fields. By introducing enjoyable and meaningful projects, this initiative can significantly broaden students' horizons, paving the way for enriched educational and career prospects.

7 Conclusion

This journey began as a quest to bridge disparities and provide equitable educational opportunities. Guided by the belief in the transformative power of education and the imperative to uplift underserved communities, the workshops presented herein offer a scaffolded pathway for students and families. Rooted in the principles of cultural capital and asset-based teaching, these workshops endeavor to dismantle barriers and empower participants to navigate the complex landscape of higher education.

Just as my perspective shifted upon encountering the stark realities of underprivileged communities, these workshops aspire to create a shift in the educational paradigm. By embracing cultural nuances, celebrating strengths, and fostering inclusivity, this initiative aims to nurture a culture of resilience, aspiration, and unity. The journey ahead involves refining and expanding these workshops, adapting to evolving needs, and engaging with partners to amplify their impact. As we navigate this path, the ultimate goal remains unwavering—to forge a brighter future where education transcends boundaries and becomes a universal catalyst for growth, progress, and transformation.

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10 Appendix

A Template for Background Interview Questions

I am Karman Singh, a graduate student from the University of Washington, computer science department. Currently, I am working on a thesis project aimed towards computer science outreach to K-12 in underserved communities. I am being advised by Dr. Lauren Bricker, one of the main people working on inclusive K-12 education at UW. I would love to learn about your experience working with students and teaching at your school.

Interview questions for teachers & faculty:

1. What is your background in education and what is your role or what do you teach in this school?
2. What does your job entail (take me through a day in the life of a teacher/faculty)?
3. Is there a specific education/teaching framework or set of pedagogical principles that you use for students in your classroom?
4. What tools or resources do you use to help support students and their learning?
5. What challenges or barriers have you encountered when trying to teach students in your classroom or outside the classroom and how are you trying to tackle those challenges?
6. Are there any tools or resources you wish that you had that can better support you and your ability to teach students in your classroom?
7. Are there any connections that you might think can be beneficial for my thesis in order to get more insight for understanding students' learning and school environment?
8. Are there any other thoughts that you would like to share?
9. Any questions for me?

B Template for University of Washington Student Survey Questions

I am Karman Singh, a graduate student from the University of Washington, computer science department. Currently, I am working on a thesis project aimed towards computer science outreach to K-12 in underserved communities. I am being advised by Dr. Lauren Bricker, one of the main people working on inclusive K-12 education at UW. I would love to learn more about your experiences going through school before coming to college. Some questions will be related to family environment, school environment, college, and several disagree/agree statements.

Feel free to skip any questions that you don't feel comfortable answering. Please let me know if you have any questions or concerns, my email address is shubhs2@cs.washington.edu.

Please know that your participation is completely voluntary and you may stop at any time without penalty. Additionally while we are collecting your email to allow you to edit your responses, your survey responses will be kept anonymized, and will be summarized for me without any of your identifying information.

Basic Information:

1. First/Last Name
2. UW email address
3. Year
4. Major

Basic High School Questions:

1. Which school district did you attend high school in?
2. Which high school did you attend?
3. How would you describe your experience overall in high school?

Family Environment Questions:

1. Did you have to work outside of school in order to help your family, this could mean working at an independent store or working alongside your family?
2. What responsibilities did/do you have around the house?
3. Were there any problems in the home that affected your ability to concentrate on school?
4. How does your environment change when moving from school to home, this can be in terms of technology access, peer pressures, etc…

School Environment Questions:

1. What problems or barriers did you encounter when going to school? These can be challenges in terms of school environment, peers, class material, etc…
2. What tools or resources did you have at your disposal to help you resolve these problems listed above?

3. Are there tools or resources that you wished that you had that would have better supported you and your ability to navigate high school?

College Questions:

1. How was the process for applying to colleges and universities like and were there specific hurdles you faced?
2. How does the college environment compare to the high school environment in terms of resources, perceptions of education, peer support, etc…
3. Did you get into the major that you intended on going into and/or do you have support for navigating through your major?
4. Are there tools or resources that you wish that you have that would support you and your ability to navigate college?

STEM/CS-Specific Questions:

1. How were you introduced to STEM or computer science fields in high school that led to majoring in this area in college?
2. Were there specific barriers that you encountered when learning in STEM high school courses?

Disagree/Agree Questions:

High school specific:

1. I felt like I was able to understand the content in my classes well
2. I felt pressured by my peers to do dangerous things such as alcohol, fighting, drugs, etc…
3. I felt safe in my school
4. I felt worried about things outside of school such as situations at home, making money, or additional responsibilities
5. I knew what I wanted to do next when I finished high school and I knew how to get there
6. I was content with the resources or technology that the school provided
7. The pandemic had a negative impact on my motivation to focus on school
8. The school pushed STEM specific classes to students
9. The teachers taught the content in a satisfactory manner
10. I wished teachers would connect with me on an individual level, such as listening to me more directly, understanding my identity, incorporate translanguaging

11. I felt like I couldn't do a specific subject because it was too hard or didn't seem important
12. My parents/guardians fully support me going to school and advocate for education
13. I was able to navigate the college application process in a smooth manner and knew how to get support when needed

College specific:

1. I know how to manage my time well and balance my school work, extracurriculars, self-care, and responsibilities outside of school
2. I deal with imposter syndrome and feeling like I don't belong at this university from time to time
3. I know how to solve problems such as applying for scholarships, getting help from professors, talking to an advisor, etc…
4. I feel guilt/worry when I can't go home to help my family or have to juggle many things at once which leads to prioritizing specific things over others.

Closing Questions:

1. Would you be willing to do a 30 minute interview so that I can learn more deeply about your experiences and specific thoughts not brought up in the questions above?
2. Are there any other thoughts that you would like to share?
3. Any questions or feedback for me?

Thank you so much for taking the time to fill out this survey and your insight is incredibly invaluable to bringing more access to higher education!

C 2023 UW Teaching & Learning Symposium Proposals

Proposal 1:

Title: "Empowering Students through Technology Access"

Project Question: How can providing students with more powerful computers and access to Code.org curriculum improve their computer literacy and overall academic performance?

Context:

- This pilot program will be implemented in a high school computer science course.
- The students in this class come from low-income backgrounds and have limited access to technology and internet at home.

- Many students are not able to afford sports or transportation and tend to miss the school activities.

Methods:

1. Provide students with more powerful laptops that have an integrated development environment (IDE) and Code.org curriculum.
2. Provide an intensive training and support for students to use these computers effectively and use Code.org curriculum.
3. Provide an opportunity for students to take the laptops home to use and practice outside of the classroom.
4. Create a virtual student community to help students connect and collaborate, through Zoom/Google meet.
5. Partner with the community organizations to provide the internet connectivity to students who don't have access to it at home

Impact/Assessment:

- The impact of this program will be measured by the increase in student scores on computer literacy assessments, as well as their performance on programming assignments and exams.
- The program will also be evaluated through surveys of student and teacher satisfaction, as well as student attendance and engagement in the class.

Application:

- This pilot program can be adapted to other high school computer science courses, as well as to other subjects that require technology access and computer literacy.
- The program can also be used to help bridge the digital divide for low-income students and provide them with the technology and skills they need to succeed in a digital world.

Duration: 3 month pilot program.

Proposal 2:

Title: "Identity and Translanguaging in the Classroom: A Pilot Program"

Project Question: How can we better support the linguistic and cultural identities of students in the computer science classroom, and how can we build a more inclusive and supportive community among students?

Context: This pilot program will take place in a computer science course at the college level, with a diverse student population. The course will focus on computer science concepts and skills, but with a specific focus on incorporating intensive translanguaging and identity instruction and fostering a sense of community among students.

Methods:

1. Use Google Translate and other tools to support students from diverse linguistic backgrounds and provide professional development opportunities for teachers to become more proficient in translanguaging instruction.
2. Increase diversity among teachers and guest speakers and provide opportunities for students to hear from and connect with professionals from diverse backgrounds in the computer science field.
3. Incorporate instruction on the history of computer science, with a focus on the contributions and perspectives of underrepresented groups.
4. Create a safe and inclusive classroom environment, where students can share their experiences and perspectives and feel comfortable expressing their identities.
5. Use conversational learning, where teachers and students engage in discussions and activities that promote critical thinking, collaboration, and peer learning.
6. Offer support to students who are facing imposter syndrome, and educate them on the concept of "imposter phenomenon"
7. Encourage self-care and time-management techniques, to help the students manage their personal and academic demands.
8. Provide opportunities for students to connect with each other and form a community, such as through group projects, study groups, or other extracurricular activities.
9. Create opportunities for students to reflect on their experiences and provide feedback on the program, to help guide its evolution.

Impact/Assessment: The program will be evaluated using a variety of metrics, including student surveys, teacher observations, and classroom discussions. We will also conduct pre- and post-program assessments of students' understanding of translanguaging and their sense of belonging in the classroom.

Application: The results of this pilot program could be applied to other disciplines and instructional contexts to help create more inclusive and supportive environments for diverse students. This program has ethical implications in computer science where it is imperative to educate and create awareness about the importance of diversity, equity and inclusion in the field, it could be beneficial for any field where students come from diverse backgrounds. The community-building activities used in this program could be adapted and used in other courses or programs to promote a sense of belonging and connection among students.

Proposal 3:

Title: "Engaging Parents and Communities in the Education Process: A Pilot Program"

Project Question: How can we better involve parents and community members in the education process, in order to support student success and improve communication between families, teachers, and school administrators?

Context: The program will focus on high school students from underrepresented communities and will target specific barriers to parent and community engagement, such as lack of knowledge about how to navigate the school system, difficulty filling out necessary

forms, low attendance at parent-teacher conferences and lack of response to emails. The program will be conducted in a high school setting.

Methods:

1. Providing workshops and resources for families on how to navigate the school system, advocate for their student, and understand the importance of their involvement in their student's education.
2. Partnering with local community leaders to host STEM fairs and field trips for students and families, in order to provide hands-on learning experiences and connect families with potential educational and career opportunities.
3. Creating a Family Engagement Team that will provide direct support to families and students, including assistance with paperwork, scheduling parent-teacher conferences, and creating opportunities for parent-teacher communication.
4. Offering mental health counseling and support services for families and students to address stressors that may affect their involvement in education and academic success.
5. Developing and implementing college and career fairs to expose students and families to different options and providing guidance from parents or faculty.

Impact/Assessment:
The program will be evaluated by tracking attendance and participation rates at parent-teacher conferences, workshops, and STEM fairs, as well as surveying students, families, and teachers about the quality of communication and support provided by the Family Engagement Team. We'll also track students' academic performance, as well as their enrollment in higher education.
Application: The program provides a model for how to involve parents and communities in the education process in a targeted and proactive way and may be adapted for use in other schools or educational contexts. The program highlights the importance of developing effective communication channels, providing targeted resources and support, and creating opportunities for families to engage in hands-on learning experiences with their students.

Proposal 4:

Title: "Supporting Student and Family Success: A Pilot Program for High School Students"

Project question: How can we provide better support for high school students who have responsibilities outside of school, such as caring for siblings or working to support their families?

Context: This pilot program will take place at a high school with a diverse student population, including many students from low-income families who have responsibilities outside of school. The instructional issue being addressed is how to support these students in their academic and personal goals, while also addressing the logistical challenges they face, such as transportation and job opportunities.

Methods:

1. Partner with local businesses to provide internship opportunities for students that align with their academic goals and allow them to gain work experience and support their families.
2. Develop a ride-sharing program to help students and families with transportation to and from school and work.
3. Work with school administration to develop and promote high school jobs that offer a safe environment, flexible schedules and are aligned to student goals.
4. Create a mentorship program that connects high school students with college students or alumni who have similar backgrounds, goals, and responsibilities to provide guidance and support.
5. Develop a coaching program that works with families to address their financial and personal needs and provide them with information and support services.
6. Develop a connection program for the students in running start, to be more connected with school, and make sure that running start fits well with their individual needs.

Impact/Assessment: The impact of this program will be evaluated through surveys of participating students, parents, and businesses, as well as through data on student attendance, academic performance, and post-graduation plans. Qualitative data will be collected through interviews and focus groups.

Application: The findings from this pilot program can be applied to other instructional settings and disciplines to better support students from diverse backgrounds, including those from low-income families or those with responsibilities outside of school. The methods used in this program, such as creating internship and mentorship opportunities, developing ride-sharing programs, and connecting high school students with college students or alumni, can be adapted and implemented in other schools to better support students' academic and personal success.

Proposal 5:

Title: "Expanding College and Career Options for Underserved Students"

Project question: How can we expose high school students to college and career options and increase their likelihood of pursuing higher education and/or obtaining a fulfilling career?

Context: This project will take place in a high school setting. The students are primarily from low-income families and are underrepresented minorities. Many of them are the first in their family to attend college. The instructional issue is that these students often lack exposure to college and career options and the resources to pursue them.

Methods:

- Offer information sessions on community college options and the benefits of attending community college.
- Invite representatives from local companies with upward mobility and tuition reimbursement programs to speak to students.

- Host school visits to local colleges and universities.
- Partner with technology companies to sponsor college and career fairs, as well as provide guest speakers and mentors for students.
- Establish a partnership with Boeing to provide aerospace classes and internships for students.
- Provide assistance with FAFSA and WASFA applications for undocumented students.
- Offer workshops on college applications, with a focus on the importance of GPA and personal statements.
- Provide one-on-one assistance for students with challenges related to family situations or their environment that may complicate the college application process.

Impact/Assessment:

- The project will be evaluated based on the number of students who attend the information sessions, college visits, and workshops.
- Survey students before and after the project to gauge their level of awareness of college and career options and their confidence in pursuing higher education or a career.
- Track the number of students who apply to college and/or enter a fulfilling career after participating in the project.

Application:
This project can be adapted and applied in other instructional contexts and disciplines by providing students with information and resources on college and career options. It can be adapted to different levels of education, such as middle school or vocational schools. This project can also be adapted to different cultures and socioeconomic backgrounds by tailoring the information sessions and resources to the specific community.

Proposal 6:

Project Title: "Passion-Driven Computer Science: Creating an Interdisciplinary STEM Bus"

Project Question: How can the integration of a passion-driven approach to computer science instruction impact student engagement and learning outcomes in an interdisciplinary setting?

Context: This project will take place in a middle school setting with a diverse population of students, including those from low-income and underrepresented backgrounds. The course will focus on computer science and technology, but will also incorporate elements from other disciplines such as math, science, and engineering. The instructional challenge being addressed is the lack of student engagement and motivation in traditional computer science instruction.

Methods: The project will utilize a passion-driven approach to computer science instruction, where students will use computer science as a tool to solve a problem they are interested in. This will be achieved by creating a STEM bus that will visit different neighborhoods and bring technology and hands-on activities to students. The bus will also provide food and other incentives to attract students and their families to participate. The project will also host

events and booths at latinx and african American hot spots, such as community centers, to get people excited about technology.
The instructional approach will be project-based and interdisciplinary, with a focus on teaching students to be creators and not just consumers. The curriculum will be designed to provide a balance of theoretical and practical instruction, and will incorporate real-world problem-solving tasks. The project will also include opportunities for mentorship and collaboration with local businesses and organizations.

Impact/Assessment: The impact of this project will be measured through a variety of methods including pre- and post-surveys, interviews, and observations. Student engagement and motivation will be evaluated through surveys and interviews, and student learning outcomes will be measured through assessments and performance tasks. Student work and projects will also be analyzed to evaluate the quality and impact of the instruction.

Application: The findings from this project can be applied in other instructional contexts and disciplines. The passion-driven approach to computer science instruction can be used to increase student engagement and motivation in other subjects, and the use of technology and hands-on activities can be integrated into other curriculum areas. Additionally, the interdisciplinary approach used in this project can be applied to other STEM fields to provide a more holistic and meaningful educational experience. The project can also be expanded to other schools and communities, and could be used as a model for similar programs in other locations.

Proposal 7:

Project Title: Improving Faculty and Counselor Training for CTE/CS Programs

Project Question: How can we improve faculty and counselor training to better support CTE/CS students in meeting state requirements and achieving college and career readiness?

Context:

- The instructional setting is a high school with a strong focus on CTE/CS programs, such as computer science and engineering.
- The students are primarily from low-income and diverse backgrounds, with a high proportion of English Language Learners (ELLs) and students from immigrant families.
- There are currently barriers with meeting state requirements for CTE/CS programs due to a lack of funding and resources for teachers, as well as limited oversight at higher levels. Additionally, the school's counselors are primarily focused on getting students to graduate from high school, rather than on college and career readiness.

Methods:

- Hiring three full-time staff members who have knowledge and experience in CTE/CS programs and can provide additional support and training for teachers and counselors. These staff members should also be proficient in multiple languages in order to effectively communicate with families and support ELL students.

- Providing ongoing professional development opportunities for teachers and counselors, such as workshops, webinars, and mentoring, to improve their knowledge and skills in CTE/CS instruction and college/career counseling.
- Establishing a college/career center at the school, where students can receive support and resources for college and career readiness, such as college applications, financial aid, and resume building.
- Partnering with local community colleges and businesses to provide job shadowing, internships, and other opportunities for students to gain real-world experience in CTE/CS fields.

Impact/Assessment:

- The impact of this project on student learning will be measured through an increase in the number of CTE/CS students who meet state requirements and are prepared for college and career.
- Additionally, students will report an increase in their understanding of college and career options in CTE/CS fields and will feel more supported in their decisions.
- To assess the impact of the project, we will conduct pre- and post-surveys with students, teachers, and counselors, as well as track student data on graduation rates, college enrollment, and job readiness.

Application:

- The findings of this project can be applied in other instructional contexts and disciplines, such as providing professional development and resources for teachers, implementing college and career centers, and partnering with local businesses and community colleges.
- Additionally, the methods used in this project to support ELL students can be applied to other schools and districts with a high proportion of ELL students.
- Other schools and districts can adapt this program to fit their own context, as it can be flexible to meet the needs of their students and teachers.

4.4.1 Introductions & Identities Workshop PowerPoint Slides

Link:
https://docs.google.com/presentation/d/1q_xcHhxkAiyt8vp9T6QxKWzhdR0OLdUcVLEAGZemKy8/edit#slide=id.p

Welcome!
Bienvenido!

Karman Singh (he/her)

1

Agenda

1. Introductions
2. My Motivation
3. Program Overview
4. Supporting your Child(ren)
5. Discussion / Questions

2

Who am I?

I graduated from the University of Washington with a Bachelors in Computer Science as well as a Masters in Computer Science

I enjoy teaching computer science topics such as machine learning and do research in explainable AI to help community health worker with cardiovascular disease diagnosis

I love playing basketball, eating different foods from all around the world, and do street photography

3

Who are you?

At your table, share:

- Your name
- A fun fact
- A real or imagined super power
- What keeps you busy?

Once you've had a chance to talk in your small groups, come back together as a whole table and introduce someone else

4

Identities Journal Prompt

Write down identities you claim

Example:

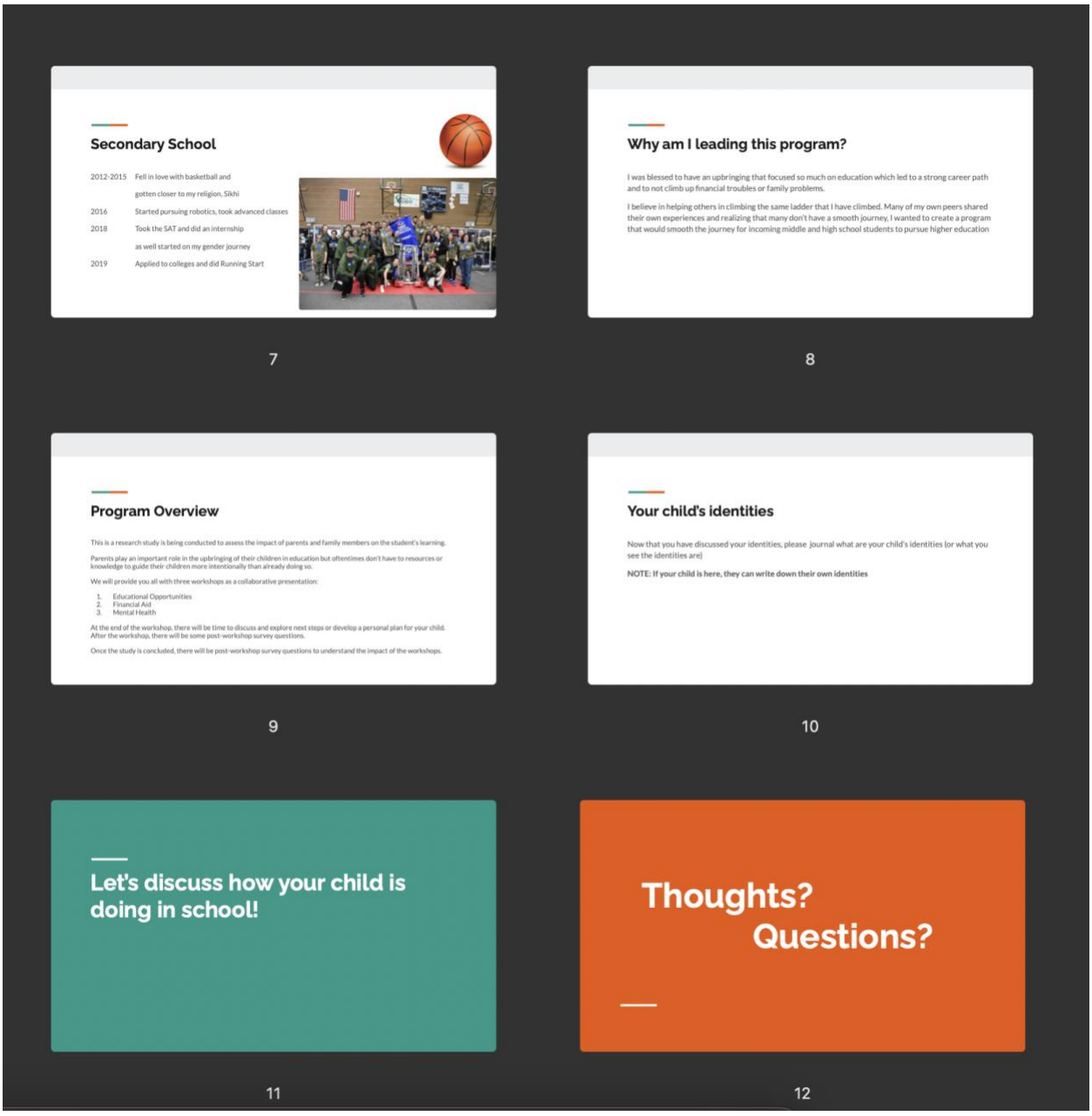
I am a geeky, creative, athletic, female presenting white mom, step (ish) mom, and cat mom... also a 3rd generation NY Jew now living as a Seattle transplant.

5

Early Childhood

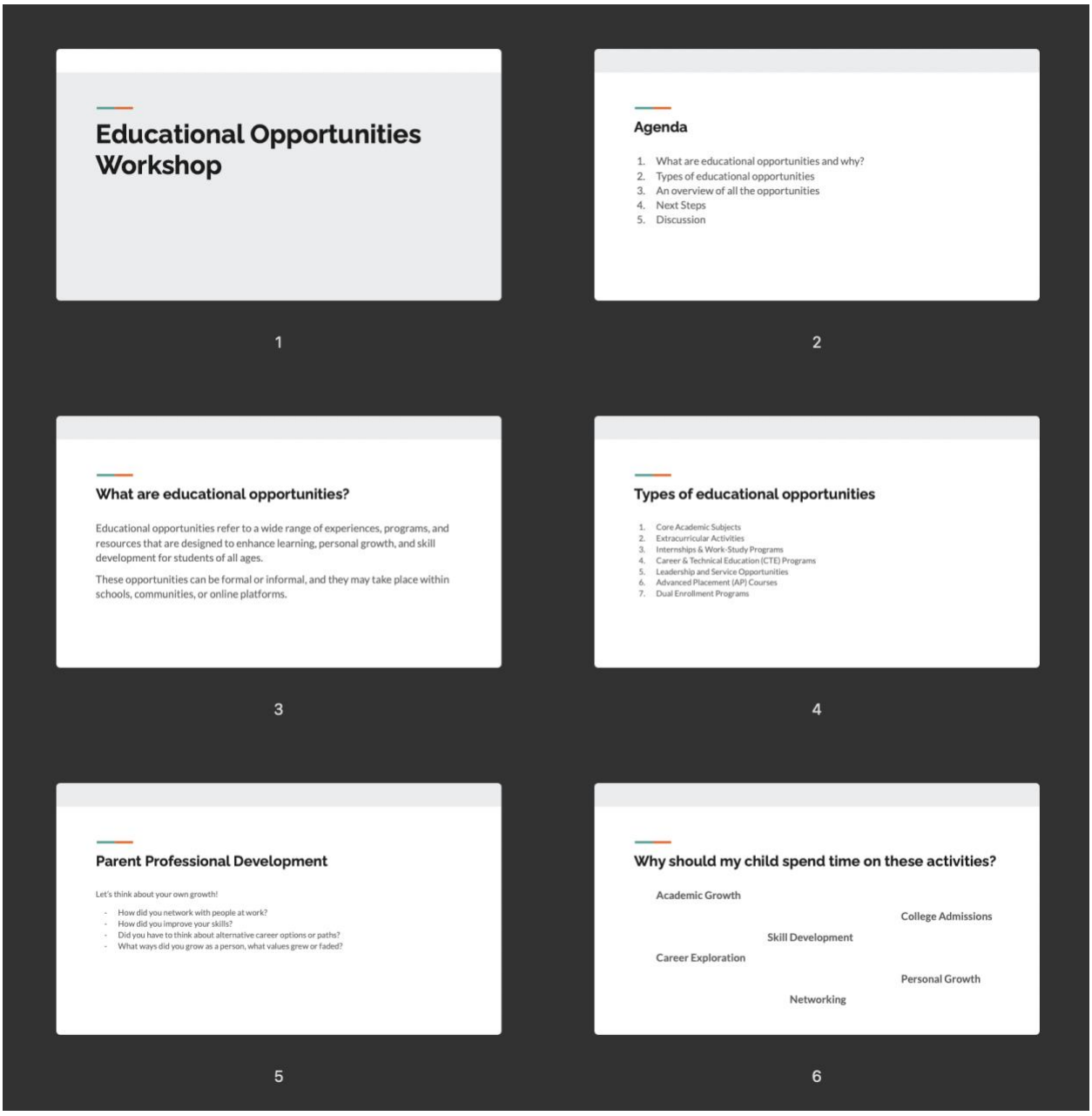
2000	I was born in Amritsar, Punjab in India
2003	Immigrated to the United States and lived in Dallas, Texas
	I was diagnosed with hearing loss and wear hearing aids
2005	I moved to Sammamish, WA and enjoyed learning
	especially math and science
2008	Lived in Ontario, Canada for 3rd grade and was bullied a lot

6



4.4.2 Educational Opportunities Workshop PowerPoint Slides

Link:
https://docs.google.com/presentation/d/1MQ8Q0WIw0OnVac1vsnreT6w49M55eKb609L2xl5hlSg/edit#slide=id.p


Educational Opportunities Workshop
1
Agenda
1. What are educational opportunities and why?
2. Types of educational opportunities
3. An overview of all the opportunities
4. Next Steps
5. Discussion
2
What are educational opportunities?
Educational opportunities refer to a wide range of experiences, programs, and resources that are designed to enhance learning, personal growth, and skill development for students of all ages.
These opportunities can be formal or informal, and they may take place within schools, communities, or online platforms.
3
Types of educational opportunities
1. Core Academic Subjects
2. Extracurricular Activities
3. Internships & Work-Study Programs
4. Career & Technical Education (CTE) Programs
5. Leadership and Service Opportunities
6. Advanced Placement (AP) Courses
7. Dual Enrollment Programs
4
Parent Professional Development
Let's think about your own growth!
- How did you network with people at work?
- How did you improve your skills?
- Did you have to think about alternative career options or paths?
- What ways did you grow as a person, what values grew or faded?
5
Why should my child spend time on these activities?
Academic Growth
College Admissions
Skill Development
Career Exploration
Personal Growth
Networking
6

Please stop me if you want to dive into a specific opportunity!

7

Core Academic Subjects

The core subjects are Math, Science, English, and History

School district website & High School website

Resources for Free Tutoring

- https://sites.google.com/auburn.wednet.edu/auburnmountainviewlibrary/tutor

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Extracurricular Activities

- Sports
- Honor Societies
- After School Clubs like Spanish Club, Robotics, etc
- National Organizations like TSA, DECA, FIRST Robotics, Debate, HOSA
- Tutoring / Volunteering

You can create your own club if you don't see the club your child is interested in too!

9

Internships & Work-Study Programs

The Auburn School District:

- Department of Technology Intern Training Program
- Apprenticeships
  - An apprenticeship is defined as a person who works for another in order to learn a trade.
- Programs of Study:
  - A Program of Study is a structured approach for delivering academic as well as career & technical education.
  - Can open opportunities with an apprenticeship or community college

Opportunities are similar in other school districts as well!

- Federal Way: https://www.fwps.org/academics/career-and-technical-education
- Renton: https://www.rentonschools.us/learning-and-teaching/career-and-technical-education/career-college-readiness/career-awareness-exploration/visit-your-career-center/opportunities
- Kent: https://www.kent.k12.wa.us/Page/10588

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Leadership and Service Opportunities

You can also take on more leadership or service roles by:

- Running for student office (ASB)
- Participating in honor societies
- Key Club for leaders
- Volunteering in your church or community center
  - ***ALS Association-Evergreen Chapter***
- Taking a larger role in class or sports
  - ***Help with Washington Youth Soccer***
- Donating food or blood
  - ***Cascade Regional Blood Services***

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Career & Technical Education (CTE) Programs

Career and Technical Education leads education in innovation offering Career Pathways to ensure students explore, compete, and succeed as lifelong learners in our future workforce.

If your child wants to be a Electrician or a Chef, how can you start the journey?

CTE Career and Technical Education

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Advanced Placement Courses

Advanced Placement® is one of the best ways to prepare for life beyond high school. Each of these courses has the potential for students to earn college credit with successful passing scores.

All kinds of subjects in History, Language Arts, Math, Arts, Sciences, Technology, and more!

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Dual Enrollment Programs

The Running Start Program is authorized by the Washington State Legislature and allows qualified students to attend classes at community/technical colleges to earn college and high school credit simultaneously.

- Students must pass specific criteria to be eligible to participate in this program.
- Tuition is funded under the Running Start Program.
- Students are responsible for purchasing any required books, lab and miscellaneous fees, and for providing their own transportation.

Green River COLLEGE · HIGHLINE COLLEGE · PIERCE COLLEGE possibilities. realized.

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Research & Science Competitions

15

Systems of Support

- No Excuses University
- AVID
- GEAR UP
- Discover U
- College and Career Counseling
- High School & Beyond Plan
- College Board Assessments
- College & Career Nights
- College & Career Access Partnerships
- University & College Partnerships
- Scholarship & Financial Aid Support

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Thoughts? Questions?

17

Additional Resources

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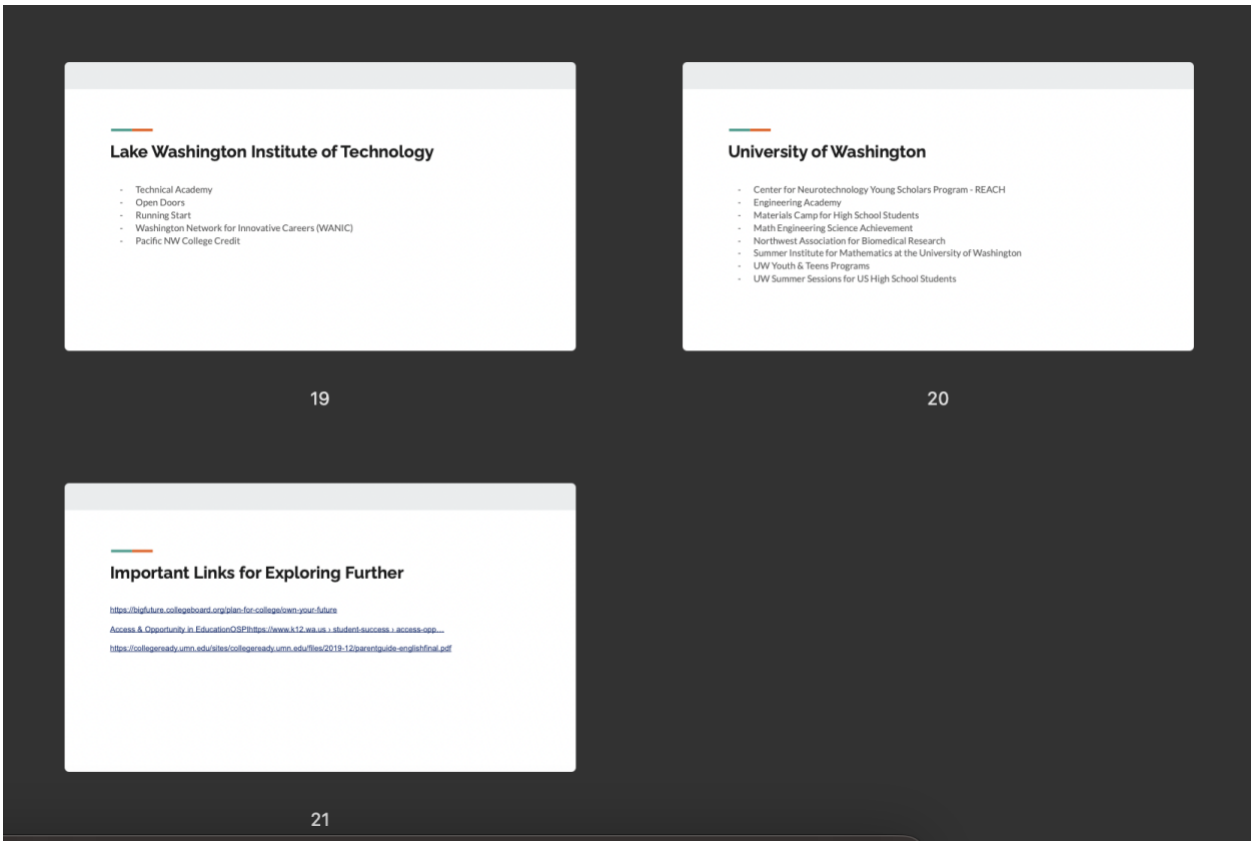
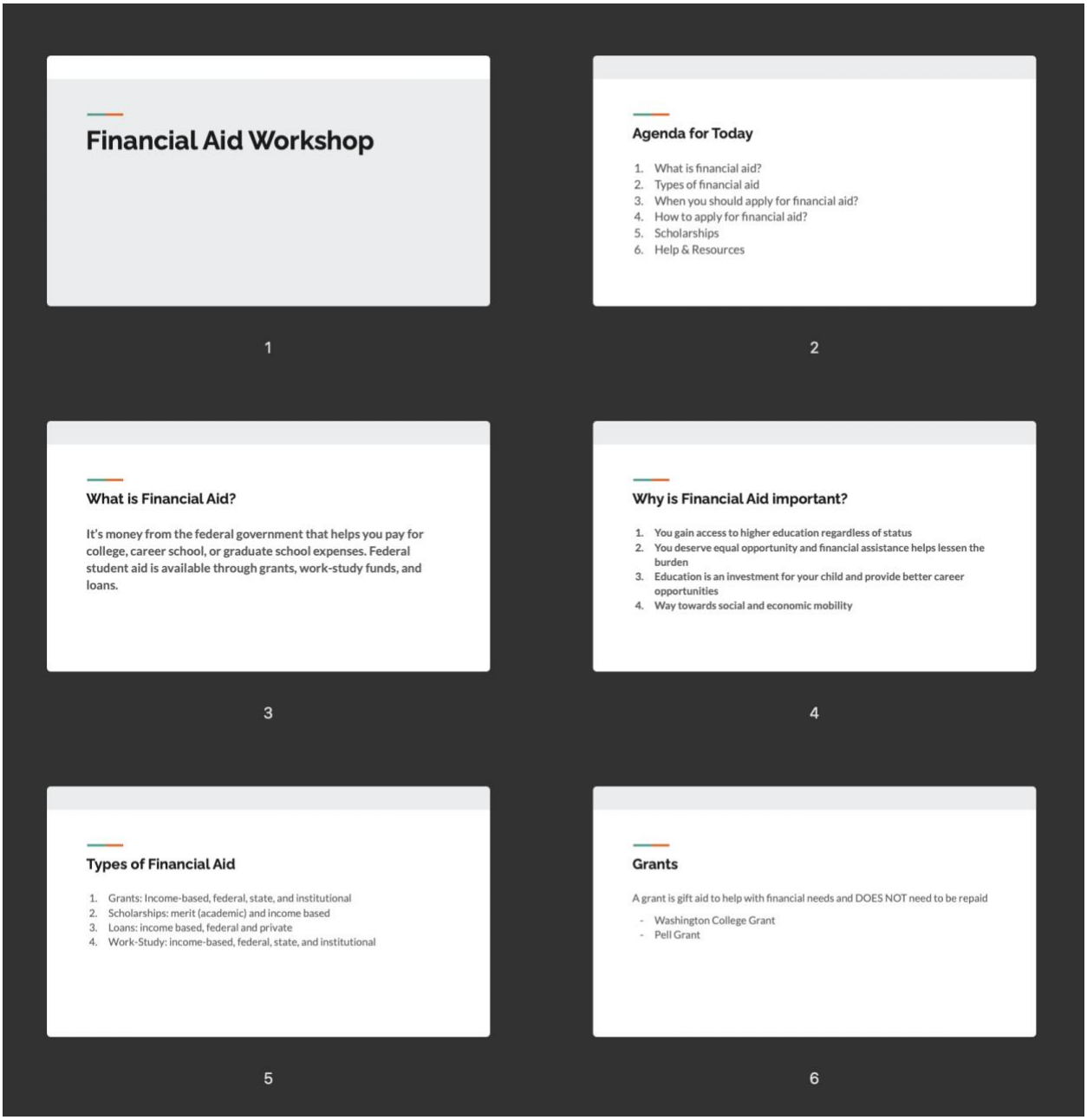


4.4.1 Financial Aid Workshop PowerPoint Slides

Link:
https://docs.google.com/presentation/d/1ck5On6E1vuWhMS9l9md7crv15dv4EZ0E2VfU2hZAFfA/edit#slide=id.p


Financial Aid Workshop
1
Agenda for Today
1. What is financial aid?
2. Types of financial aid
3. When you should apply for financial aid?
4. How to apply for financial aid?
5. Scholarships
6. Help & Resources
2
What is Financial Aid?
It's money from the federal government that helps you pay for college, career school, or graduate school expenses. Federal student aid is available through grants, work-study funds, and loans.
3
Why is Financial Aid important?
1. You gain access to higher education regardless of status
2. You deserve equal opportunity and financial assistance helps lessen the burden
3. Education is an investment for your child and provide better career opportunities
4. Way towards social and economic mobility
4
Types of Financial Aid
1. Grants: Income-based, federal, state, and institutional
2. Scholarships: merit (academic) and income based
3. Loans: income based, federal and private
4. Work-Study: income-based, federal, state, and institutional
5
Grants
A grant is gift aid to help with financial needs and DOES NOT need to be repaid
- Washington College Grant
- Pell Grant
6

Washington College Grant (WCG)

This grant makes education and training beyond high school affordable.

The maximum award amount will cover FULL TUITION at any approved in-state college

https://wsac.wa.gov/wcg

An eligible student from a family of four making around $56,000 or less per year would receive a full award

Partial grants are available for families making up to $102,000 per year (state median family income)

7

Scholarships

Scholarships are gifts that don't have to be repaid and are designed to help students pay for college

- One-time gift or renewable

Start the search through thewashboard.org

the WashBoard.org
Smarter Scholarship Matches

8

College Bound Scholarship

Early commitment of state financial aid to free and reduced price lunch eligible for middle school students

Works with other state financial aid to cover cost of tuition at over 65 colleges

College Bound Scholarship
WASHINGTON

9

Work-Study

Provides part-time jobs for students with financial need, allowing them to earn money to help pay education expenses.

10

Loans

A student loan is money you borrow for your education and pay back over time. Unlike grants or work-study, you do have to pay back your loans.

Unsubsidized Student Loans

- Interest begins accruing as soon as the loan is disbursed, including while you are enrolled in school

Subsidized Student Loans

- Interest is paid by while you're enrolled at least half time in college

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Sources of Financial Aid

Federal: Typically can be used at most schools in most states

State: Typically for residents to attend most colleges in the state

College: Offered by a specific school to attend that school.

Organizations: Offered by nonprofits, business, churches, etc.

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Federal Financial Aid Programs

Pell Grant

Federal Work-Study

Unsubsidized / Subsidized Student Loans

Parent Loans

FAFSA
FederalStudentAid
An office of the U.S. Department of Education

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Washington State Financial Aid

Washington College Grant

College Bound Scholarship

State Work-Study

Passport to Careers

Opportunity Grant

WASHINGTON
OPPORTUNITY PATHWAYS
WASFA
Washington Application for State Financial Aid

14

State Financial Aid Calculator

This tool calculates potential awards from the Washington College Grant and Pell Grant programs

The only way to know for sure how much financial aid you can receive is to complete a FAFSA or WASFA financial aid application

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FAFSA or WASFA: Choose ONLY One

FAFSA: Free Application for Federal Student Aid

FAFSA.gov

WASFA: Washington Application for State Financial Aid

wsac.wa.gov/WASFA

Both Applications Open October 1st

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Free Application for Federal Student Aid (FAFSA)

17

Two Ways to Apply for the FAFSA

Website

Paper FAFSA

FAFSA App: **Removed due to lack of use**

18

Spanish Option Available!

19

Washington Application for State Financial Aid (WASFA)

20

Let's fill out an Application together!

21

Filling out the WASFA Application

https://wsac.wa.gov/sites/default/files/2023_WASFA_updated_instructions.pdf

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Filling out the FASFA Application

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Financial Aid Timeline

1. Gather required documents
2. Create an FSA ID or WASFA account (only created once)
3. FAFSA & WASFA open October 1st
4. Students apply for financial aid and admissions
5. Follow up with colleges for any additional request for information
6. Review your award letters and accept your aid

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Next Steps

Explore your options

- Explore post secondary options using the student's high school and beyond plan
- Talk to the student's counselor to make sure you are on track for graduation.

Determine Which Financial Aid Application to Use

- If you are still not sure, go to https://wsac.wa.gov/WASFAelig

Create an FSA ID or WASFA Account

- You can create an FSA ID by going to https://fsaid.ed.gov/npas/index.htm
- You can create a WASFA account by going to https://wsac.wa.gov/WASFAelig
- Complete your application starting October 2021

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Explore Your Options: College & Career Compass

https://compass.wa.gov/

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Resource: College Knowledge

Developed in collaboration with OSPI, PSCCN, Road Map Project, WSAC, and WCAN

Digital Resource: https://www.wcan.org/college-knowledge/

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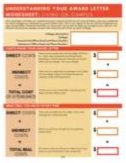
Resource: Junior/Senior Student Workbook



https://wsac.wa.gov/12th-year-campaign

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Thoughts? Questions?

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