

EmpowerED Adolescent Mental Health: A Pilot Program in Burke County, North Carolina to Improve Education Access and Quality by Utilizing Evidence-Based Mental Health Best Practices

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ABSTRACT

Angela Ballard, Tamille Hester, Amanda Reinhold, Mandeep Kaur Sekhon, Olivia Siroonian:
EmpowerED Adolescent Mental Health: A Pilot Program in Burke County, North Carolina to Improve
Education Access and Quality by Utilizing Evidence-Based Mental Health Best Practices

(Under the direction of Sarah Diekman, Oscar Fleming, and Laura Torres)

There is a critical link between social determinants of health, particularly educational access and quality, and mental health outcomes among adolescents in rural areas like Burke County, North Carolina. The detrimental impact of adverse childhood experiences (ACEs) on academic performance and mental well-being underscores the need for targeted interventions. The proposed intervention, EmpowerED: Adolescent Mental Health Program, has a mission to redesign the existing system by utilizing mental health education resources to strengthen scholastic achievement of students from underprivileged populations (i.e., low socioeconomic areas). Organized as a pilot after-school program at Liberty Middle School, it seeks to mitigate the effects of ACEs and improve overall educational experiences for economically disadvantaged adolescents. The goal is to foster systemic change by demonstrating how mental health and wellbeing can enhance educational quality and positively influence health outcomes; therefore, contributing to a healthier future for Burke County residents.

Keywords: social determinants of health, mental health, mental wellbeing, education access, education quality, Burke County, North Carolina, adolescent, adverse childhood experiences, ACEs

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COMMON PROPOSAL

Social Determinant of Health Analysis and Goals

Social determinants of health (SDOH) are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina 2030, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; National Alliance on Mental Illness [NAMI], 2024). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; NAMI, 2024).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Mental Health (ED-AMH) Program* – will partner with Liberty Middle School (LMS) to demonstrate how a pilot after-school mental health program can positively impact the educational experience of economically disadvantaged adolescents 11-13 years old. The program will provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate burdens resulting from ACEs (Sparr et al., n.d.). By integrating skills to address ACEs, students will have

more support in school increasing their likelihood for higher academic learning that can improve future both physical and mental health outcomes in Burke County, North Carolina.

Contextual Analysis

Policy and Programmatic Changes

There have been many political efforts to enhance education access and quality for low-income families within the county. The establishment of Burke County's Student Services Department was a significant step to advance mental health support and positive academic outcomes for students. This department works to implement initiatives and provide counseling services within schools using school psychologists. State-level policies can set the terms and conditions for public schools to execute strategies for growing adolescents to become mentally healthy individuals that will lead and inspire future generations towards enhancing education attainment to improve population health. It is significant to the social institution of education for local or state policies to align with community needs. This alignment helps to address the impact of ACEs, provide a better educational experience to keep children in school, and reduce long-term costs associated with untreated mental health conditions.

Shaping education access and quality is complex (see Appendix F.2a). Low-income students are more likely to be affected by mental health issues yet have fewer resources available to them. As a result, there are less opportunities to improve mental health and counter ACEs. This leads to repeating academic years, dropping out, suspensions, truancy, and other academic challenges (Schulte-Körne, 2016; Lipscomb, 2021; McLeod, 2009). These issues can cause social isolation, stigma, and bullying, as well as wedge students from the academic, mental health and social supports they need (Jakovljevic et al., 2016; NAMI, 2024). Programs within school systems have a unique advantage as adolescents spend most of their time in school (McLeod, 2009). Schools must work to enhance students' mental health to promote retention and academic performance.

The ED-AMH program will pursue two primary goals: fostering higher academic learning and promoting positive socio-emotional, behavioral, and physical health. The core components of this pilot, after-school program, will focus on education and mental health. The contents will be composed of a 17-

week curriculum during the spring semester for three days a week and 150 minutes each day. In addition, the curriculum will encompass modules focused on healthy emotional regulation, promoting balanced eating habits, refining problem-solving skills, and enhancing interpersonal communication skills. Weekly activities will offer community building and service, physical exercise, journaling, yoga, dance, and mindful exploring. Students will also learn about concepts and theories related to the science of learning such as self-efficacy and self-regulation.

Community Partners

Engagement with community partners is essential to bring this program to fruition. A Power-Interest Grid identifies partners with the highest influence and interest, including Liberty Middle School (LMS) counselors and psychologists, school administration, LMS families, and the Burke County School Board. A Stakeholder Matrix (see Appendix D.2a: Figures and Tables) defines anticipated engagement from community partners on an SDOH Task Force. Following the Public Health Code of Ethics, the project team will ensure all families can participate in the engagement process by addressing relevant barriers like lack of transportation, childcare, internet access, and translation services (American Public Health Association, 2019). It will be especially important that lower income families are recruited by using existing communication channels to families in the National School Lunch Program (North Carolina Department of Public Instruction, n.d.).

A team leadership model within the steering committee (see Appendix A.3) will allow various members to demonstrate leadership behaviors and responsibilities as the project evolves and moves through the EmpowerED process flow at LMS. This model will utilize lateral decision making instead of the traditional top-down vertical decision making that occurs in a hierarchical organization, also known as a hierarchy (Northouse, 2022; Aime et al., 2014). Team accountability requires clear and transparent communication of goals, roles, tasks, and expectations. These should be defined at the start of the project and space should be provided for discussion and modifications as needed by the collective team. Tools such as The Hill Model for Team Leadership, developed by Northouse, can be used to ensure accountability (Northouse, 2022). To define the various roles of the stakeholders, a “Responsible,

Accountable, Supportive, Consulted, and Informed” (RASCI) matrix (see Appendix E.2.a) can be used. The RASCI matrix “assigns specific roles and responsibilities to each project member directly related to the part of the project they are working on” (Brulotte, 2023).

Recommendations for Action

Engagement and Improvement Plan

Implementation of an effective intervention involves collaboration with community and co-design partners: state and local governments; LMS school psychologist and counselors; school boards, LMS students; families of LMS students; LMS teachers; and LMS leaders and administrative staff (i.e., Principal). The team will utilize Experience-Based Co-Design (EBCD), which involves establishing governance, roles, and responsibilities for the co-design team; gathering user stories; hosting co-design meeting(s); and supporting co-design meetings over a limited period (Bate & Robert, 2006; Van Citters, 2017). Through EBCD, the project team can utilize tools like personas, empathy maps, and user stories to create an effective design brief.

The school board's active participation is vital, considering its influence on educational policies and resource allocation. Barriers to engagement include conflicting policies and limited resources, while facilitators of engagement include alignment with educational objectives and collaboration with stakeholders. Engagement methods include policy briefings, stakeholder roundtable discussions, and data review workshops tailored to different phases of the initiative. The steering committee will use these guidelines to collect data on the progress of the program, fidelity to the mission, and satisfaction amongst stakeholders (see Appendix F.3). Data collection includes changes in resources, member characteristics, user satisfaction, and relationship development. Trust building and continuous communication will be paramount to ensuring success in the co-design process and scalability of this program. Although the steering committee is assigned to ensure successful change and quality improvement through transformational leadership, the decision-making power must be in the hands of everyone involved in the program. The actions are based on values of equity, growth, and teamwork through effective communication, inclusion, mentorship, and evaluation.

Policy and Program Evaluation

It is important to include the policy development process when designing an improvement plan. The goals of the policy development process (see Appendix C.2a) are to ensure that the chosen policy is politically feasible, easily implemented, cost effective to the county, positively impactful on the community, and improves health equity. Mandating existing public schools to allow all students to participate in after-school programs is the policy option that aligns best with each goal. Our project team recommends the county commissioners pursue this alternative as it will support the ED-AMH Program's efforts to address low academic performances among adolescents with mental health disorders in public middle schools.

Once ED-AMH is implemented and has established a flow within the school, the team can create a Continuous Quality Improvement (CQI) framework for program evaluation. To track the performance of the program, our project team will collaboratively work to monitor outputs, processing, balancing and outcome measures (see Appendix C.2). The processing measures will include observing the number of students actively participating in the after-school program activities and weekly check-ins with their school counselor. One output and balancing measure will be more community involvement in education and determining the number of students that still show delays in academic achievement. A short-term outcome is to see at least 10 percent of the students participating in the program having a better understanding of how to cope with certain adverse situations. One of the long-term outcomes the program expects to develop is a 15 percent decrease in the rate of mental health illnesses among adolescents. Furthermore, the ED-AMH program has an overarching quality aim to increase scholastic achievement by 28 percent across three of the seven middle schools in Burke County by July 2034.

Conclusion

Schools have significant potential to cultivate an environment conducive to lifelong student opportunities and achievements. The ED-AMH pilot program can catalyze change to improve educational access and quality through mental health and wellbeing education and programming at Liberty Middle School and beyond. By focusing on education access and quality as a key social determinant of health,

systemic change can create pathways of opportunity for youth. Through a contextual analysis of policy, systems, engagement, leadership, and quality, we have identified recommendations for action that are evidence-based principles of public health intervention. These recommendations focus on improving mental health and wellbeing as an area of concern in the 2022 Burke Community Health Assessment. Leveraging recently allocated federal mental health funding for North Carolina, as well as piloting a program through a robust, existing infrastructure at Liberty Middle School, holds promise for bolstering educational accessibility and quality on a broad scale, thereby contributing to enhanced outcomes for adolescents in Burke County.

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APPENDICES

APPENDIX A: GROUP PROPOSAL TABLES, FIGURES AND DELIVERABLES

Appendix A1: Rich Picture

Burke County, NC




Of Burke's 26 public schools, only 17 full-time counselors

From 2022 CHA, 888 of 2,149 residents reported anxiety & depression as most concerning




LIBERTY MIDDLE SCHOOL

Morganton, NC
2 counselors + psychologist



Relevant Stakeholders



School Board
Teacher
Burke County Public Schools Student Services Dept
Parents
Students
Counselor



Education Access & Quality to Improve Adolescent Mental Health

Associated Factors / Consequences

Nutrition policies that outline SES

FREE & REDUCED LUNCH APPLICATION



Welfare / Medicaid Stigma

✓ **LOW INCOME!**

Feeling isolated

Poor mental health



Drop outs, suspensions, low math/reading proficiency, & poor physical health

Considerations for Intervention

After-school programs & extracurricular activities

Familial support





Bipartisan Safer Communities Act Includes New Mental Health Funding

Appendix A.2: Group Presentation

EmpowerED Adolescent Mental Health (ED-AMH) Program



Angela Ballard, Tamille Hester, Amanda Reinhold,
Mandeep Sekhon, Olivia Siroonian

PUBH 992 – Leadership in Practice: Culminating Experience
The Gillings School of Global Public Health, The University of North Carolina at Chapel Hill
Sarah Diekman, MD, JD, MS, MPH & Oscar Fleming DrPH, MSPH
April 9, 2024

Mandeep: Good afternoon and thank you for the opportunity to present to you today. We are excited to talk about EmpowerED – an adolescent mental health initiative for Burke County, NC.

Introductions

Meet our team of public health professionals leading the pilot EmpowerED program



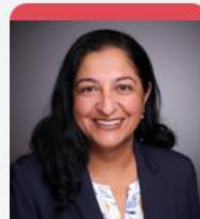
Angela Ballard



Tamille Hester



Amanda Reinhold



Mandeep Sekhon



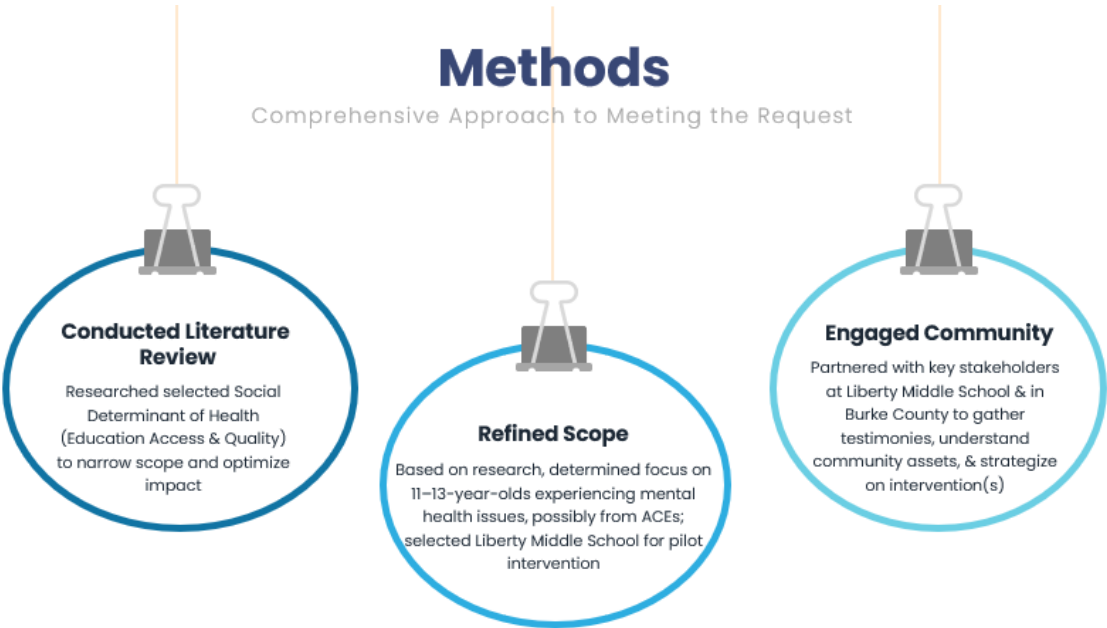
Olivia Siroonian

Mandeep: Our public health team experiences and interests include Project Management, Communication, Data Management and Analysis and Policy.

Today's Meeting Agenda



Mandep: In our brief time together today, we will cover the following topics. Additional details about our proposal are included in the written packet that you all have received or will receive following our presentation.



Amanda: To meet your request on addressing Education Access and Quality to create systemic change and improve health outcomes in Burke County, our project team leverage the methods outlined at a high level here. We conducted a thorough literature review to obtain relevant and evidence-based insights. We refined our scope to suggest focus on 11-13 year olds experiencing mental health issues that could be improved through Education Access and Quality. And, we engaged the local Burke County community to partner with Liberty Middle School as a pilot intervention site that, if successful, could be scaled for longer term and broader impact.

SDOH Overview

EDUCATION ACCESS AND QUALITY IN BURKE COUNTY

Education Access & Quality

Missing school, dropping out, repeating grades, & adoption of unhealthy behaviors → lower academic attainment.

Importance on Health

Lower educational attainment leads to:

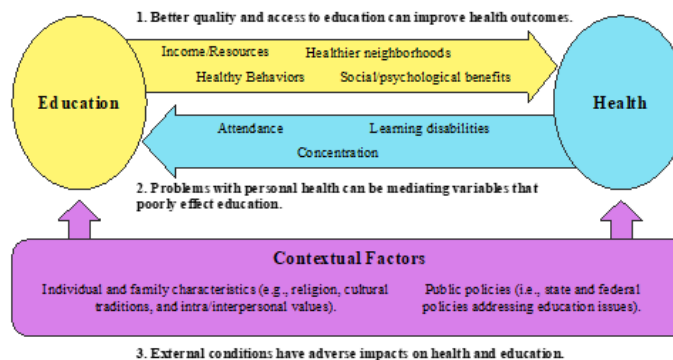
- Unemployment, incarceration, undesirable neighborhoods (low-resources)
- Worse physical and mental health
- Smoking, drinking, violence, unaffectionate relationships
- Heart disease, stroke, asthma, chronic obstructive pulmonary disease,

County Assets

Students spend large amount of time in schools
 Educator's commitment
 Strong parental partnerships.

Areas for Improvement

Low-income and rural community
 Hardships such as COVID-19 pandemic, school shootings, etc.
 ACEs and mental health problems are associated with truanting, dropping out, and repeating grades.



Healthy North Carolina 2030, n.d.; Koon, 2023; Lipscomb, 2021; Office of Disease Prevention and Health Promotion, n.d.; Schulte-Körne, 2018; Molead, 2009

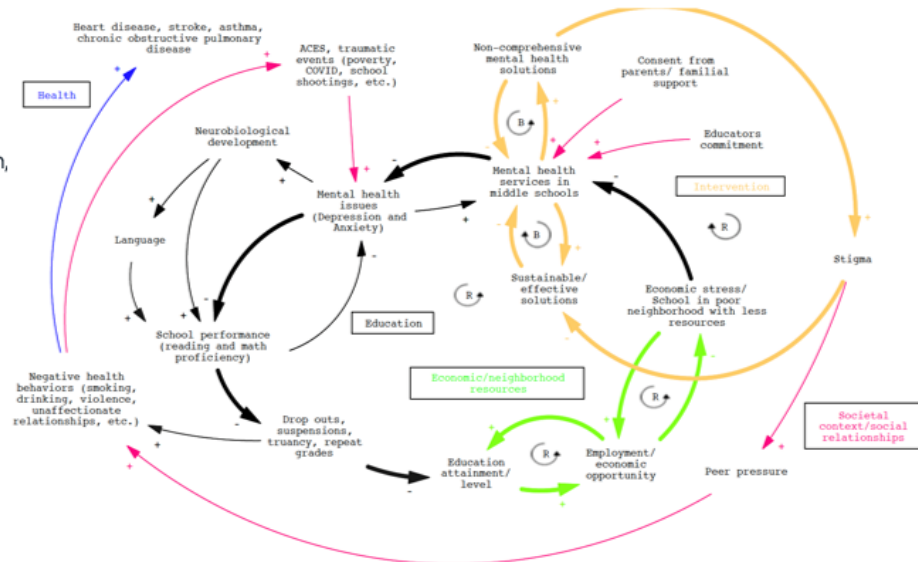
Mandeep: Education access and quality is a social determinant as it is a key component to children growing up healthy and living longer. When students miss school, drop out, repeat grades, and engage in unhealthy behaviors that take from their academic focuses, they are more likely to have lower educational attainment. Lower educational attainment can lead to multiple related issues such as Unemployment, incarceration, Poor physical and mental health, Smoking, drinking, violence, heart disease, stroke, asthma, COPD. Economic hardship is one criterion of Adverse Childhood Experiences (ACEs). Children residing in Burke County battle with poverty more severely and Low income students are more likely to struggle with math and reading, less likely to graduate or attend university, and twice as likely to miss school. Students spending large amount of time in schools; commitment of educators and school leaders; strong relationship between school and families as evidenced by a strong PTA. We have a community that is low-income and rural and we have this opportunity to implement change in the system. In the 2022 county health assessment mental health (anxiety and depression) was a concerning issue for many Burke families. School is an opportunity for mental health support to mitigate these harms of ACEs and promote wellbeing so that students can do well in school.

Programmatic Changes

A Complex System We're Addressing

Education Access/ Quality

- Low-income students more likely to have worse mental health, yet less resources
- Mental health illness impacts school performance and future
- Intervening in school system to improve education

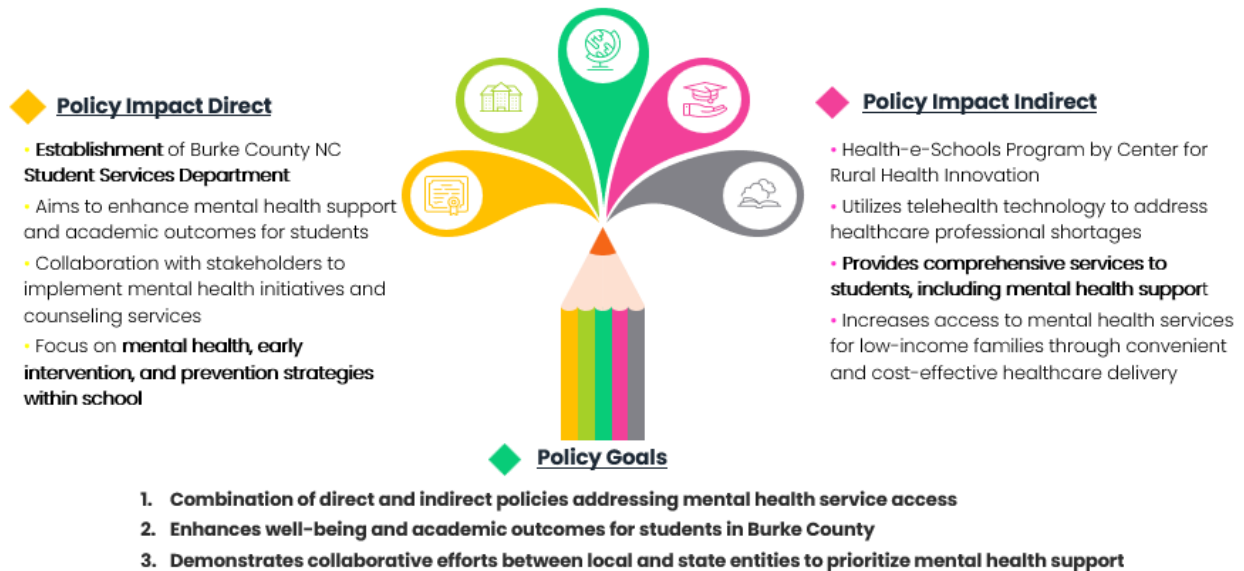


Healthy North Carolina, 2030; Webster, 2022.

Olivia: This slide is overwhelming because it is representative of the complexity of the system and the problem we have at hand. When thinking about education access and quality, schools that are in poorer neighborhoods have less school funding for mental health services and resources in a community that already has more prevalent Adverse Childhood Experiences (ACEs). With less opportunity to counter negative mental health impact of ACEs amongst their students, mental health issues persist which decrease school performance. This leads to repeating grades, dropping out, suspensions, truancy, and other academic challenges. With lower education attainment, the cycle of lower employment opportunity, worse neighborhood status, negative health behaviors, and worse long-term physical and mental health continues. This is a complex system with factors such as educational, economic, neighborhood, health, societal, and previous intervention attempts that play a role. Adolescents spend most of their time, giving schools a unique advantage to intervene with a program that improves mental health to improve educational experience. This slide is to attest to how a school program to help improve mental health amongst students has a complex yet expansive impact.

Policy Environment

Political Efforts to Address SDOH



Angle: Policy profoundly shapes mental health service access in Burke County, NC through direct and indirect initiatives. The establishment of the Burke County NC Student Services Department directly aims to bolster mental health support and academic performance for students. Collaboration with stakeholders drives the implementation of mental health programs emphasizing early intervention in schools. Indirectly, initiatives like the Health-e-Schools Program leverage telehealth to address healthcare gaps, while Senate Bill 68 indirectly impacts mental health services by enhancing teacher pay. The blend of direct and indirect policies for mental health service access in Burke County enhances student well-being and academic outcomes, showcasing collaborative efforts between local and state entities prioritizing mental health support.

Community Partners and Engagement

Stakeholder Analysis and Engagement

Community Partner	Areas & Level of Influence	Engagement Approach	Strategies for Obtaining Support &/or Reducing Obstacles
Liberty Middle School (LMS) Counselors and Psychologists	High - licensed resource to be leveraged for program	Empower	Incentivize for taking on additional work
LMS Leaders / Admin Staff	High - approves funding and components of program for LMS	Collaborate	Outline strategic plan / benefits to cost analysis, etc.
Families of LMS Students	High - encourage schools to pursue program; provides consent for child	Involve	Regular communication; remove any admin burdens for giving consent for children; incentivize
Burke County Public Health Department	High - especially if they are seeing youth struggling with mental health across the county	Collaborate	Present school-based program as a complementary resource to public health programs
Burke County School Board	High - decision-making authority	Involve	Present in clear, concise manner given the multiple various priorities they must address

Purpose

- Collaboration facilitates comprehensive and sustainable solutions.
- Community partners provide insights, resources, and support for mental health initiatives.

Priority Partner: Burke County School Board

- Influences accessibility and quality of mental health services within schools.
- Factors influencing engagement include alignment with educational priorities, resource availability, and collaboration with stakeholders.

Engagement Barriers and Facilitators (3)

- Alignment with policies, availability of resources, collaboration with stakeholders.
- Positive relationships and effective communication facilitate engagement.

Engagement Methods (3)

- Policy briefing to present program objectives and strategies.
- Stakeholder roundtable discussions : collaborative decision-making.
- Data review workshops: evidence-based planning and evaluation.

1847 Gillens (Global School of Public Health 2022) American Public Health Association (APHA) 2019

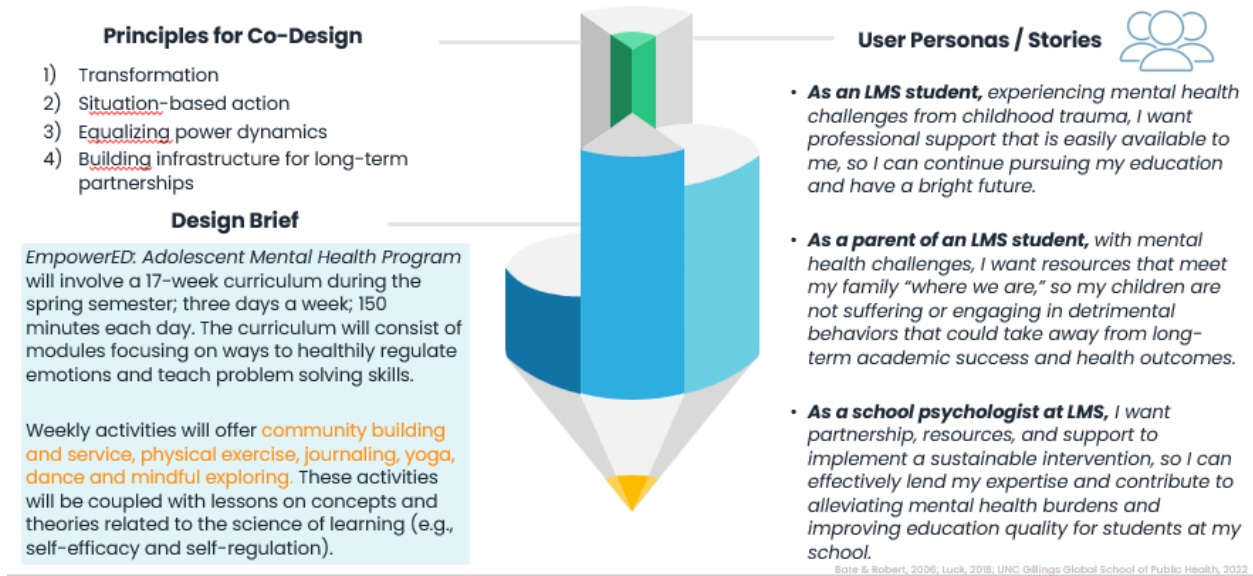
Angie: This slide illustrates our engagement strategy, beginning with a Stakeholder Matrix to identify key community partners for our SDOH Task Force. Prioritizing stakeholders with high interest and influence ensures robust collaboration. The Burke County School Board is highlighted as a critical partner due to its significant role in shaping educational policies. However, factors like policy alignment and resource availability may affect their engagement. To address this, we have developed an engagement plan comprising policy briefings, roundtable discussions, and data review workshops. These activities aim to foster positive relationships, facilitate collaborative decision-making, and ensure evidence-based planning for sustainable and scalable mental health initiatives.



Olivia: Steering team: The principal, other administrative staff, and our program team. There will be pre-determined measures of success to help maintain member accountability and continuous quality improvement. To resolve conflict, leadership team will act as a steering committee and they will engage a co-design process to create common goals, objectives, and data measurements. Continuous communication via surveys, meetings, and forums. Transformational leadership techniques such as "individualized consideration" to ensure diverse individual needs are met. Goal 1: Ensure appropriate coalition resources & membership characteristics via quarterly check-ins. Goal 2: Implement a beneficial mental health program through successful avenues of community engagement and co-design processes. Goal 3: Communication pathways are developed to foster a community of support and long-lasting genuine relationships.

Improvement Plan

Leveraging Experience-Based Co-Design (EBCD) for Systemic Change



Amanda: To implement an effective intervention within the system Olivia presented earlier, our team will use Experience-Based Co-Design, which relies on “stories and storytelling [as] the basis” for the work. Noted in the top left-hand corner, the team is aligned around four key principles for co-design. On the right, the team has also leveraged useful co-design tools including personas, an empathy map, and defining user stories and quality characteristics to understand and prioritize user needs in the system. These principles and tools ultimately led to our final design brief, which we will provide to this team as highlighted in the bottom left-hand corner.

Program Evaluation

Measuring Program Performance

Processing Measures

- Weekly check ins with school counselor.
- Average number of students participating in program activities.
- Collecting averages on new test scores.
- Monthly meetings with parents

Balancing Measures

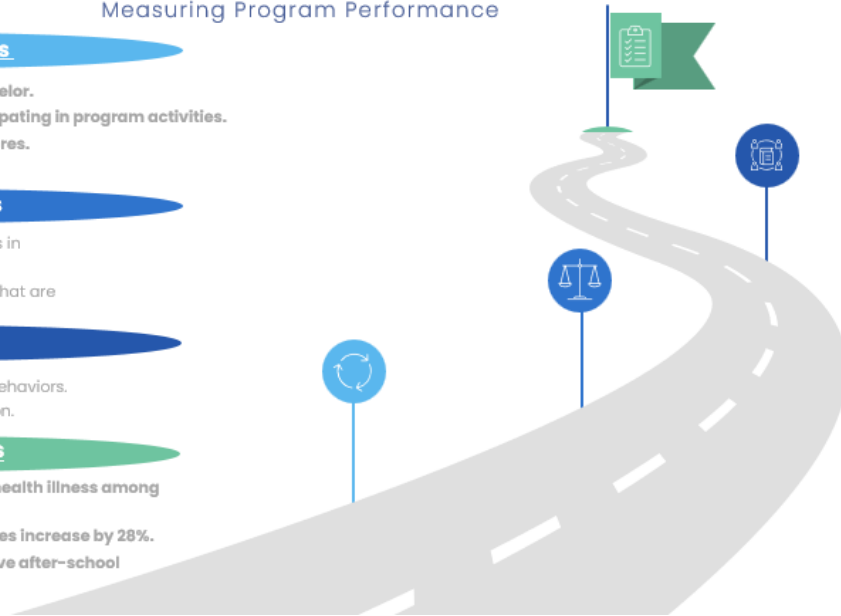
- Number of students reporting delays in academic development.
- Number of parents and/or children that are satisfied.

Output Measures

- More students with positive health behaviors.
- Community involvement in education.

Outcome Measures

- A 15% decrease in the rate of mental health illness among adolescents.
- Academic middle school performances increase by 28%.
- Three out of seven middle schools have after-school mental health education programs.



Tamille: The ED-AMH program will operate under two main goals being to encourage higher academic learning and support positive socio-emotional, behavioral, and physical health. There is the expectation for the students to learn about concepts and theories related to the science of learning such as self-efficacy and self-regulation as weekly activities will offer community building and service, physical exercise, journaling, yoga, dance, and mindful exploring. To track the performance of the program, our project team will collaboratively work to monitor processing, balancing, output and outcome measures. To provide examples: read one point from each measure.

Thank You for Hosting Us Today



◆ Reminder on Our Goal

EmpowerED: Adolescent Mental Health Program will seek to alleviate mental health burdens resulting from ACEs, especially for low-income student ages 11-13 years old, by providing evidence-based forms of mental health education and best practices (including physical activity like yoga, dance, and exercise) via an after-school mental health program piloted at LMS in Burke County.

◆ Next Step

Our team will provide a virtual & printed copy of our presentation and full packet with all details to the County Commissioner's office.

◆ Contact Us

EmpowerED@email.unc.edu

Tamille: With values reflecting on community, education, health, and quality, the ED-AMH program can be a catalyst for change in advancing educational experience and approach through mental health education and programming at Liberty Middle School and beyond. Our project team has been grateful to receive helpful guidance and mentorship from the faculty of UNC's Gillings School of Global Public Health to assist Burke County's Board of Commissioners in solving a public health issue.


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APPENDIX

No script or talking points for Appendix slides below.

Contextual Analysis of Leadership



Steering committee – Liberty Middle School (LMS)

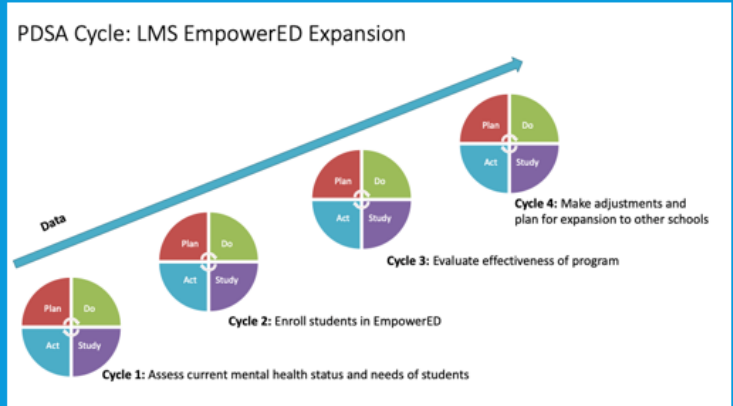
RASCI Levels	Project Goals		
Who is...	Goal 1: Evaluate number of school counselors/psychologists	Goal 2: Create and implement a mental health wellness program	Goal 3: Create a community of support
Responsible	Burke County School Human Resources	School counselors and psychologists, LCSW, yoga teacher, school nurse	LMS principal, LMS leadership team, LMS staff, LMS families, LMS school counselors and psychologists
Accountable	LMS Principal	LMS principal, LMS leadership team	LMS principal
Supportive	LMS leadership team, LMS staff	School counselors and psychologists, LMS Principal, LMS leadership team, LMS staff, LMS students, LMS families	LMS students, LMS families, school counselors and psychologists, LCSW, yoga teacher, school nurse, Focus Behavioral Health Services, LLC
Consulted	Burke County School Human Resources, LMS leadership, existing LMS school counselors and psychologists, Focus Behavioral Health Services, LLC	LMS students, LMS families, school counselors and psychologists, LCSW, yoga teacher, school nurse, Focus Behavioral Health Services, LLC	LMS students, LMS families, school counselors and psychologists, LCSW, yoga teacher, school nurse, Focus Behavioral Health Services, LLC
Informed	Burke County School Board	LMS staff, LMS families, LMS students	Burke County School Board, Burke County Health Department

RASCI: Responsible, Accountable, Supportive, Consulted, and Informed

Brulotte, 2023

Recommendations for Quality

- Use PDSA (Plan-Do-Study-Act) for continuous quality improvement
- Expansion of EmpowerED
- Create educational materials to fulfill unmet activity 10.2



(Plan-Do-Study-Act (PDSA) Directions and Examples, n.d.).

Recommendations for Policy

Policy Alternatives to Addressing Low Academic Performances and Adolescent Mental Health

Policy Option	Feasibility		Cost to County	Health Equity	Impact on Community
	Political	Implementation			
Weight	2x	1x	1x	3x	3x
Maintain the Status Quo	5	5	1	1	1
Require Additional Funding	5	5	3	3	3
Mandate Student Participation	5	5	5	5	5

Totals

Maintain the Status Quo = 22
 Require Additional Funding = 36
 Mandate Student Participation = 50

APPENDIX B: ANGELA BALLARD INDIVIDUAL DELIVERABLES

Appendix B.1: Individual Social Determinant of Health Analysis

Background

Social determinants of health encompass environmental, social, economic, and cultural factors significantly influencing an individual's health outcomes and overall well-being. Various structural elements, including the distribution of resources, socioeconomic status, and access to healthcare services, shape these non-medical factors (Hahn, 2021). Childhood mental health is a significant social determinant in Burke County, NC, influencing emotional, psychological, and behavioral aspects during crucial developmental years, specifically during middle school years (Yu et al., 2022). North Carolina ranks 32nd in the number of children affected by two or more Adverse Childhood Experiences (ACEs), highlighting the prevalence of ACEs in the state (Yau et al., 2022). Childhood mental health has an intense impact on school performance with various additional overlapping elements (Nelson et al., 2020). These other elements include emotional, psychological, and social aspects (Nelson et al., 2020). Social aspects encompass factors like socioeconomic status, family dynamics, access to healthcare, and community resources (Yu et al., 2022). The COVID-19 pandemic has exacerbated existing challenges, particularly concerning access to mental health services and resources in underserved areas, leading to adverse mental health outcomes for adolescents (Gotlib et al., 2023).

The short-term impact of childhood mental health can result in challenges in school, such as difficulties in concentration, behavioral issues, absenteeism, and declined academic performance (Schlack et al., 2021). Children may experience difficulties in focusing and concentrating on assigned tasks (Yu et al., 2022). Mental health issues also impact behavioral challenges, affecting the student's interactions with fellow students, teachers, and administration, which could disrupt the learning environment (Schlack et al., 2021). Reduced mental well-being may lead to an elevated number of days of school absence, posing challenges to maintaining an academic pace comparable to their peers of the same age (Schlack et al., 2021). Short-term impacts tend to bridge into long-term implications such as persistent struggles in adulthood, affecting relationships, the ability to be and remain employed, and overall quality of life

(Schlack et al., 2021). These individuals may struggle to create and sustain healthy, supportive adult relationships (Schlack et al., 2021). A person's mental health capability may affect their ability to maintain consistent employment, consequently impacting their career trajectory and overall success (Veldman et al., 2015).

Moreover, individuals may face an elevated risk of developing further mental health disorders, sustaining the cycle of mental challenges (Ibrahim et al., 2020). Enhancing childhood mental health in Burke County demands a comprehensive strategy that integrates school mental health services, awareness initiatives, stigma reduction, and improved resource access to foster resilience and positively impact health outcomes. Acknowledging the extensive and long-lasting impact on academic results forms the rationale for addressing childhood mental health as a determinant. Addressing mental health as a determinant allows for the development of interventions aimed at mitigating these challenges, creating an environment conducive to positive mental health and academic success.

Geographic and Historical Context

Burke County, NC, established in 1777 and inhabited by Native Americans, has undergone economic shifts from agriculture to a mix of industries, including healthcare and manufacturing (*History of the County | Burke County, NC*, n.d.). The county's workforce comprises 39,000 individuals, with primary industries employing 9,291 in Manufacturing, 6,216 in Health Care and Social Assistance, and 4,246 in Retail Trade (US Census Bureau, 2023). The average median household income is \$62,267, with a 57% employment rate, and 18.1% of the population lives below the poverty line, exceeding the national average of 12.6% (US Census Bureau, 2023). According to the 2023 NC Association of County Commissioners Map Book, 20% of children in Burke County live in poverty, compared to 18% for the state of NC (2023). Additionally, in 2023, 31% of the population in Burke County enrolled in Medicaid, and 15% of households experienced food insecurity (US Census Bureau, 2023). These income figures, employment, and poverty rates provide a snapshot of Burke County's economic health. Additional US Census and US News data for Burke County is presented in Appendix A, B and C to offer further insights into the county's characteristics. Burke County also faces challenges such as a significantly higher

percentage of disconnected youth compared to the state average, with 16% of teens and young adults aged 16-19 neither working nor in school (state average 7%) and notably higher suicide rates at 17 deaths per 100,000 people compared to the state average of 13 (*Burke, North Carolina, n.d.*). In 2021, Burke County Mobile Crisis Management reported 325 dispatches, up from the previous year's count of 265 (*Burke County, NC | Official Website, n.d.*). These factors underscore the complex interplay between childhood mental health as a social determinant and its impact on school performance in Burke County, NC, warranting focused efforts to address these challenges.

Current Programs

Additional efforts are necessary to comprehensively address remaining childhood mental health challenges in Burke County despite prior implementation of strategies and programs. Addressing these challenges is crucial not only for the well-being of children but also for their academic success, as childhood mental health significantly impacts school performance (Schlack et al., 2022). In March of 2023, the state released the North Carolina School Behavioral Health Action Plan to address the urgent mental and behavioral health crisis facing youth in NC (Staff, 2023). The strategies listed in the Health Action Plan involve enhancing schools' capacity to address behavioral health needs and training personnel to recognize and respond to emerging issues (Staff, 2023). School-based telehealth pilots will expand access for 10,000 students in high-need areas (Staff, 2023). Flexible funding supports local School Health Advisory Councils, fostering community coalitions for behavioral health resources (Staff, 2023). Efforts also connect schools and families with local behavioral health partners. Funding includes a statewide electronic health record system for secure student records and seamless transfers during relocations (Staff, 2023). The Burke County Public School System has implemented these strategies and programs, but more effort is needed to determine specific results.

Summary of Priority Population

A program is needed to address educational access and quality effectively. The project team will analyze middle school children attending Liberty Middle School in Burke County, NC, who come from low-income backgrounds. The focus is on children aged 11-13 from low socioeconomic backgrounds.

Socioeconomic factors, family dynamics, and healthcare access significantly influence childhood mental health and academic performance, impacting stress levels, resource availability, and enrichment opportunities (Jabbari et al., 2023). Given Burke County's elevated Medicaid rates and lower education levels, implementing mental health initiatives for these children can enhance academic success (Nelson et al., 2020). Disparities in healthcare access may impede timely interventions, affecting educational outcomes and underscoring the need for a comprehensive approach addressing socioeconomic conditions, healthcare access, family and community support, and inclusive education systems to nurture every child's mental health and academic potential.

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Appendix B.1a: Figures and Tables

Figure 1.

Social Determinants of Health



Source: Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved 4/1/2024, from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>

Appendix B.2: Concentration Deliverable 1 – Policy

Background:

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina 2030, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; *Mental Health in Schools*. (n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; *Mental Health in Schools*. (n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases attainment for

higher academic learning that can improve health outcomes and promote a healthy future for Burke County.

Policy Deliverable 1 – Direct Impact:

In 2017, the Burke County Public School system established The Burke County NC Student Services Department, aiming to enhance mental health support and academic outcomes for students (Koon, 2022). The department collaborates with stakeholders to implement mental health initiatives, provide counseling services, and promote awareness and positive practices among students. (Student and Family Services | Post Details, n.d.). Tasked with implementing various initiatives and programs, it focuses on mental health, early intervention, and prevention strategies within schools (Koon, 2022).

Working closely with school administrators, teachers, counselors, and community stakeholders, the department collaborates to identify and address mental health access and concerns among students (Koon, 2022). Critical functions of the Burke County NC Student Services Department include offering counseling services to students experiencing emotional or psychological difficulties provided by trained professionals. Developing and implementing mental health education programs aims to increase access, raise awareness, and promote positive mental health practices among students (Koon, 2022).

The establishment of the Burke County NC Student Services Department represents a local-level policy implemented by the Burke County Public Schools district, with approval from the local school board and district administration. This initiative underscores a substantial dedication to prioritizing access to mental health services within the educational system. It emphasizes the significance of offering extensive assistance to meet the various mental health requirements of students in Burke County, emphasizing the department's pivotal role in guaranteeing students' well-being and achievements. The establishment of the Burke County NC Student Services Department benefits middle school students from low-income families by ensuring access to comprehensive mental health support by providing counseling services, mental health education programs, and referrals to external resources. This commitment underscores the county's dedication to prioritizing student well-being and academic success.

An additional policy that directly addresses access to mental health services in Burke County is the N.C. Medicaid clinical coverage policy Number 8-I, titled N.C. Medicaid Psychological Services involving Health Departments and School-Based Health Centers to the population under 21 (N.C. Leg, n.d.). This policy, established at the state level, outlines the coverage and reimbursement criteria for mental health services provided to low-income individuals, including middle school children enrolled in the Medicaid program in North Carolina (N.C. Leg, n.d.). The NC Department of Health and Human Services (NC DHHS) is the state agency tasked with overseeing the administration of the Medicaid Program and establishing policies and policy criteria (N.C. Leg, n.d.).

N.C. Medicaid clinical coverage policy Number 8-I significantly impacts access to mental health services for low-income middle school students in Burke County, NC, by outlining coverage and reimbursement criteria (N.C. Leg, n.d.). This state-level policy ensures that children under 21, enrolled in Medicaid, receive the necessary support (N.C. Leg, n.d.). Offering psychological services prevents emotional and behavioral problems, improves coping skills, and strengthens family support systems (Lorant et al., 2003). Additionally, providing these services in health departments and school-based health centers offers beneficiaries more options, integrates physical and behavioral health services, and correlates with positive academic outcomes for all students (Lorant et al., 2003).

Policy - Indirect:

Health-e-Schools, developed by the Center for Rural Health Innovation (CRHI) in partnership with Burke County Public Schools, represents a pioneering approach to delivering healthcare to rural students in western North Carolina (*Rural Project Summary: Health-e-Schools*, n.d.). Initiated in 2011, this program utilizes telehealth technology to address the challenges posed by healthcare professional shortages and transportation limitations faced by low-income families (*Rural Project Summary: Health-e-Schools*, n.d.). With support from various organizations such as the USDA Rural Utility Service, Health-e-Schools equips participating schools with telehealth equipment and offers comprehensive services to all students, regardless of insurance coverage or financial status (*Rural Project Summary: Health-e-Schools*, n.d.). By leveraging on-site nurses and off-site family nurse practitioners via telehealth, this initiative

addresses various health concerns, including chronic disease management, behavioral health, and mental health (*Rural Project Summary: Health-e-Schools*, n.d.).

This initiative serves as an example of an indirect policy that impacts access to mental health services for low-income families in Burke County by addressing the broader issue of healthcare accessibility in rural areas. By integrating telehealth services within schools, Health-e-Schools indirectly increases access to mental health services for low-income families by providing a convenient and cost-effective healthcare delivery, thereby reducing the need for parents to take time off work and students to miss school for healthcare appointments (*Rural Project Summary: Health-e-Schools*, n.d.). Additionally, the program's sliding fee scale and policy of not turning away patients due to insurance status ensure that mental health services are accessible to all students, irrespective of financial constraints (*Rural Project Summary: Health-e-Schools*, n.d.). Health-e-Schools exemplify innovative healthcare delivery, indirectly improving access to mental health services for underserved populations and thus, enhancing academic outcomes for all students (*Rural Project Summary: Health-e-Schools*, n.d.).

Senate Bill 68, enacted as SL 2023-143, will allow Burke County Public Schools to enhance teacher supplemental pay (Joint Statement Regarding School Funding and Teacher Supplements | Post Details, n.d.). This initiative resulted from collaborative efforts between the Burke County Board of Education and the Burke County Board of Commissioners, who jointly repealed 40-year-old legislation limiting funding sources for the school district (Joint Statement Regarding School Funding and Teacher Supplements | Post Details, n.d.). Previously, specific sales taxes in Burke County were designated solely for school capital projects (McBrayer, 2023). However, the repeal allows the school district to allocate these funds for operational expenses (McBrayer, 2023). With assistance from Burke County Commissioners, \$1.5 million can now be directed towards teacher supplements, ultimately influencing the recruitment and retention of qualified educators (McBrayer, 2023). Chair of the Board of Commissioners Scott Mulwee emphasized the importance of working together to enhance teacher supplements and per-pupil funding (Joint Statement Regarding School Funding and Teacher Supplements | Post Details, n.d.). At the same time, Chair of the Board of Education Wendi Craven appreciated stakeholder input and

legislative efforts (Joint Statement Regarding School Funding and Teacher Supplements | Post Details, n.d.). Senator Warren Daniel and Representative Hugh Blackwell were also acknowledged for their swift legislative actions in pushing through this critical change (Joint Statement Regarding School Funding and Teacher Supplements | Post Details, n.d.).

This state law, passed by the Senate, indirectly affects access to mental health services for low-income families in Burke County by allocating additional funding for teachers and staff (McBrayer, 2023). The increased supplements aim to attract and retain qualified counselors, potentially enhancing the quality of education. This improvement in academic staffing may indirectly improve access to mental health, as a supportive setting fosters positive mental health (McBrayer, 2023). Additionally, the increase in per-pupil funding could indirectly enhance access to mental health services by allocating additional resources for staff, programs, and initiatives targeting mental health needs, thereby potentially contributing to increased school academic performance.

Policy Environment and Strategy:

Improving access to mental health services for low-income families in middle schools to increase academic performance is in alignment with the strategic goals of the 5-member Burke County Board of Commissioners (Board of Commissioners | Burke County, NC). Firstly, such an initiative directly contributes to community advancement by investing in essential services that enhance the overall well-being of residents (Mongelli et al., 2020). By ensuring access to mental health care, the initiative promotes participative governance and fosters a community where individuals can live, work, and thrive (Board of Commissioners | Burke County, NC). Moreover, enhancing access to mental health services aligns with the goal of public safety and well-being by addressing critical aspects of residents' health and safety (Board of Commissioners | Burke County, NC). The initiative can help prevent more severe mental health issues and promote overall community wellness by providing support early on.

Additionally, this initiative demonstrates fiscal stewardship by investing in preventative measures to reduce long-term costs associated with untreated mental health conditions. The board emphasizes the significance of student well-being by prioritizing mental health, thus fostering a positive school culture

(Board of Commissioners | Burke County, NC). Overall, improving access to mental health services for low-income families in Burke County is a strategic investment that aligns with the board's goals of community advancement, public safety, fiscal stewardship, and employee satisfaction (Board of Commissioners | Burke County, NC). For various reasons, commissioners are interested in initiatives aimed at enhancing access to mental health services for low-income families (Mongelli et al., 2020). They prioritize constituent concerns and recognize the significant impact of mental health issues on community health (Mongelli et al., 2020). Additionally, supporting access to these services promotes community stability and addresses economic implications associated with untreated mental health conditions. Commissioners also consider humanitarian equity and social justice concerns in service access. Addressing mental health disparities aligns with their responsibility to promote the well-being and prosperity of constituents and the community (Mongelli et al., 2020).

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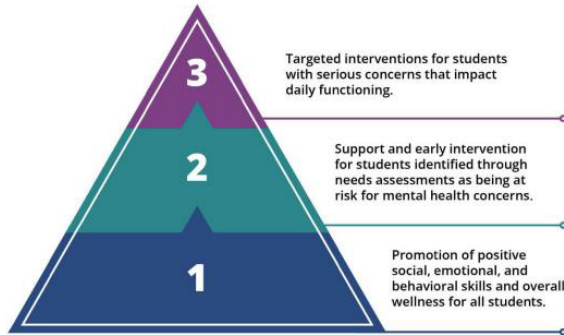
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Appendix B.2a: Figures and Tables

Figure 1.

Multitiered Systems of Support



Note: A variety of MTSS models are available to schools. This resource uses the MTSS to describe the general framework, not a specific model.

Source: [Promoting Mental Health and Well-Being in Schools: An Action Guide for School and District Leaders \(cdc.gov\)](#)

Figure 2.

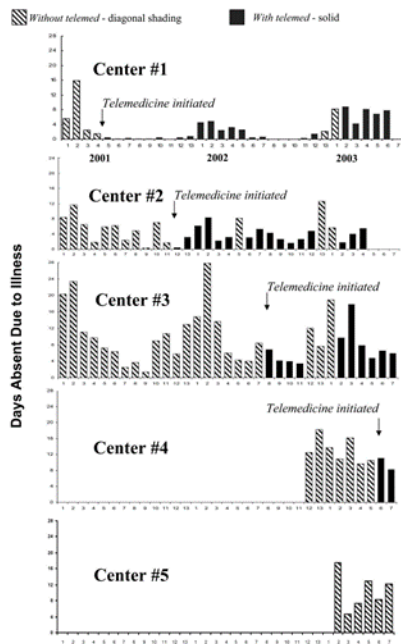
Health-e-Schools within North Carolina



Source: [Home | Health-e Schools \(health-e-schools.com\)](#)

Figure 3.

Days Absent from School Due to Illness before and after Telemedicine



Note: ADI before and after telemedicine. ADI is expressed in mean days absent per week per 100 registered child-days. Each calendar year is broken into 13 periods, each 4 weeks long.

Source: Kenneth M. McConnochie, Nancy E. Wood, Harriet J. Kitzman, Neil E. Herendeen, Jason Roy, Klaus J. Roghmann; Telemedicine Reduces Absence Resulting from Illness in Urban Childcare: Evaluation of an Innovation. *Pediatrics* May 2005; 115 (5): 1273–1282. 10.1542/peds.2004-0335

Appendix B.3: Concentration Deliverable 2 – Engagement

Introduction

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; National Alliance on Mental Illness [NAMI], n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; NAMI, n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases attainment for higher academic learning that can improve health outcomes and promote a healthy future.

Purpose [see Appendix D.2]

It is essential to involve community partners in a program addressing access to mental health services, especially at Liberty Middle School in Burke County, NC. Collaboration with these stakeholders, who bring diverse perspectives, resources, and expertise, facilitates the creation of comprehensive and sustainable solutions (Triplett et al., 2022). Engaging local mental health organizations, advocacy groups, government agencies, School Boards, teachers, parents, and students strengthen long-term systemic change initiatives (Domitrovich et al., 2008). Community partners provide valuable insights into local needs, facilitate collaboration across sectors, and mobilize support for initiatives addressing access to mental health services and programs (Khodyakov et al., 2011). Their involvement is essential for building strength, promoting equity, and fostering a healthier community for middle school students and beyond (Triplett et al., 2022).

Priority Partner

In this initiative focused on enhancing mental health services accessibility for students at Liberty Middle School in Burke County, the Burke County School Board emerges as the unique community partner. The School Board, responsible for overseeing educational policies and operations in the county, holds considerable influence in determining the provision and accessibility of mental health services within the school system (Winkler, 2005). While the School Board plays a pivotal role in establishing policies, allocating resources, and implementing initiatives that directly affect the accessibility and quality of mental health services for students at Liberty Middle School, it is essential to note that they may not always be the most engaged group due to various other priorities that may take precedence (Winkler, 2005). Nonetheless, their involvement remains vital, given their mandate to prioritize students' well-being and educational outcomes (Hoagwood et al., 2003). Factors such as alignment with educational priorities, resource availability, collaboration with stakeholders, and past commitment to mental health initiatives will influence the School Board's participation as a community partner for a program focusing on middle school mental health services (Domitrovich et al., 2008). Understanding and addressing these factors are crucial for securing their active participation and support. Active participation from the School Board in

this initiative is essential for fostering sustainable improvements in mental health service accessibility and ensuring support for students' mental health needs within the educational setting.

Engagement Barriers and Facilitators

In exploring the involvement of the Burke County School Board in enhancing access to mental health programs in local middle schools, several vital factors emerge that would influence their participation. The alignment of proposed initiatives with existing educational policies and priorities significantly shapes the Board's inclination toward engagement (Quandt et al., 2001). Programs that align with their objectives are more likely to garner participation, while conflicting policies may pose barriers. The availability of resources, encompassing financial and logistical aspects, profoundly affects the School Board's capacity to engage (Domitrovich et al., 2008). Restrictions such as limited funding or competing budget priorities may hinder their ability to participate fully (Domitrovich et al., 2008).

Conversely, dedicated funding streams or external support mechanisms can facilitate involvement by alleviating financial constraints. The level of collaboration and partnership with various stakeholders, including community members, mental health organizations, advocacy groups, government agencies, and teachers and students, plays a pivotal role (Triplett et al., 2022). Positive relationships and effective communication channels with these external entities may promote the School Board's willingness to participate in collaborative endeavors. Conversely, strained relationships or conflicts with key stakeholders could negatively impact engagement (Wallerstein et al., 2002). By analyzing these factors, stakeholders gain valuable insights into the facilitators and barriers influencing the Burke County School Board's potential participation in enhancing access to mental health programs in local middle schools (Triplett et al., 2022). This comprehension guides strategic approaches designed to create collaboration and increase the probability of achieving successful engagement and immediate support from the Burke County School Board.

Engagement Methods

Engaging School Board members in Burke County, NC, on implementing a program focused on accessing mental health services in middle schools employing various engagement methods tailored to different phases of the initiative. During the design phase, we will conduct a policy briefing to present a comprehensive overview of the program's objectives, strategies, and anticipated outcomes. We will highlight the pivotal role of access to licensed school counselors in addressing students' mental health needs (Domitrovich et al., 2008). This briefing will address the barrier of administrative priorities by emphasizing the importance of prioritizing mental health initiatives within the educational setting. Throughout all phases, stakeholder roundtable discussions will provide a forum for collaborative problem-solving, discussion, and decision-making, allowing School Board members to engage actively with other stakeholders (Weiss et al., 2002). The goal of the discussions is to address potential barriers or challenges by fostering transparent communication and consensus-building among stakeholders (Cashman et al., 2022). During these roundtable discussions, barriers like limited communication channels can be addressed and resolved (Quandt et al., 2001). In the sustain and scale phase, a data review workshop will enable evidence-based decision-making and long-term planning by analyzing quantitative data on student outcomes and qualitative feedback from stakeholders. The program will utilize evaluation methods such as the Four-Item Communities That Care Brief Depression Scale (CTC-BDS) (Rhew et al., 2016). This scale will enable targeted efforts and real-time data collection to assess our initiatives' effectiveness and promptly make necessary adjustments (Rhew et al., 2016). This workshop creates a data-driven approach by providing clear justification for sustaining and scaling mental health initiatives in middle schools throughout the county (Cashman et al., 2008). Through these engagement methods, School Board members will play a pivotal role in supporting the program's successful implementation and sustainability, ultimately improving mental health services for middle school students in Burke County.

Summary

The Burke County School Board, as a unique community partner, requires a targeted engagement plan due to its pivotal role in educational policymaking and resource allocation. Implementing an after-school program with a licensed counselor at Liberty Middle School necessitates their active involvement to ensure adequate support and resources (Domitrovich et al., 2008). By emphasizing the positive impact of increased access to mental health services on children's education, a tailored engagement strategy can facilitate collaboration, address potential barriers, and leverage the Board's authority to enhance mental health access for students (Koon, 2022).

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Appendix B.3a: Figures and Tables

Table 1.

Engagement Grid

Engagement Methods	Format	Related Facilitators	Related Barriers	Performance Measures	Timing
Stakeholder Round Table Discussions (County representatives, school admin, counselors, etc.)	Group	Collaborative partnerships	Resource limitations	Number of meetings held progress towards sustainability	Design, improve, sustain/scale
Community Awareness Meeting (Teachers/staff/parents / Family members)	Group	Public awareness, education, and advocacy	Political considerations, perception of need, Budget constraints	Number of attendees, level of community engagement	Design, Improve
Policy Briefing	Group	Data-driven approach	Resource limitations	Policy changes implemented, resource allocation changes	Improve
Data Review Workshop	Group	Awareness, education, advocacy, data collection, feedback	Accessibility, internet Availability and reliability, if online seminar – platform preference and user friendliness	Number of responses or attendees, quality of feedback	Design, improve, sustain/scale

APPENDIX C: TAMILLE HESTER INDIVIDUAL DELIVERABLES

Appendix C.1: Individual Social Determinant of Health Analysis

Education Access and Quality

Non-medical factors that have detrimental effects on the health outcomes (e.g., behavioral health, chronic conditions, and life expectancy) of members in communities are known as social determinants of health (Parrish, 2010; Social Determinants of Health, 2022). In 2020, the Office of Disease Prevention and Health Promotion began their 5th initiative to ensure stronger advancements in population health by launching Healthy People 2030; a program that heavily targets public health problems regarding social determinants of health and health equity (History of Healthy People, 2021). Healthy People 2030 has listed education access and quality as one of the five categories of social determinants of health.

The Healthy People 2030 program works effortlessly to “increase [provide more] educational opportunities [enrichment programs and extracurricular activities] and help children and adolescents do well in school” especially in southern states (e.g., North Carolina, Georgia, Mississippi, and Alabama) (Healthy People 2030, n.d.). Numerous research studies have proven education to be a steppingstone for young individuals living in environments of poverty and communities with scarce resources; however, the importance of education is often undervalued and goes unnoticed as a determinant of health (The Lancet Public Health, 2022).

Only during times of serious and unprecedented events such as the Covid-19 pandemic, the social institution of education is reassessed. In North Carolina, the Department of Public Instruction found that students were facing the downfall of inadequate education, and it is believed they are at risk for suffering the short and long-term effects given the adverse childhood experiences (ACEs) (i.e., unfortunate terrifying situations) they have endured due to the aftermath of Covid 19 (The Communications and Information Division, 2022).

There is sufficient evidence to support that younger people who obtain access to quality education are among populations reportedly with lower rates of morbidity, positive health behaviors (e.g.,

exercising, maintaining a healthy diet, and seeking medical attention when needed), and an increase in life expectancy (The Lancet Public Health, 2022). However, the existence of ACEs prevents children (ages 0-17) from gaining life opportunities. For instance, children in families of a lower socioeconomic status tend to be victims of abuse and neglect (examples of ACEs) which often leads to many different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). Notably, limited access and poor-quality education have short-term and long-term negative effects on health outcomes especially for children within low socioeconomic populations.

Short and Long-Term Effects

The short-term and long-term harmful impacts of inadequate education on community health outcomes include: 1) bad health behaviors; 2) social and psychological disruption; 3) violent and unhealthy neighborhoods; and 4) higher rates of mortality and morbidity. Short-term (1-3 years) impacts involve tobacco use, alcohol consumption, missing classes, anxiety, depression, and poor academic performance (Jakovljevic et al., 2016). After the onset of bad health behaviors and social/psychological problems, the collision of long-term (7-10+ years) effects such as difficulties with finding and retaining employment, having a stable financial income, and being insured create a lifespan of hardship.

(Jakovljevic et al., 2016; Vital Signs, 2021). The relationship between education and health can be seen in Figure 1 (see Appendix A).

Education Access and Quality in Burke County

Geographic and Historical Context

Burke County is located along the mountainous regions of North Carolina and neighbor to counties Caldwell, McDowell, and Rutherford. In 2022, Burke County had a total population of 87,881 (about the seating capacity of the Los Angeles Memorial Coliseum) with 70,999 individuals reporting to belong to the White (non-Hispanic) population, 5,445 belonging to the Black/African American population, 6,176 belonging to the Hispanic population, and 3,203 belonging to the Asian population (Our Changing Population: Burke County, North Carolina, 2022). Despite there being little diversity, the

county's population collectively share education as a cultural value. Through existing policies, we can see how much communities in Burke County care deeply for the future of their children.

Priority Population

When diving in to take a further look into how the effects of childhood mental health disorders negatively impact education, the priority population to focus on should be children between the public middle school ages of 11 to 13 years old belonging to families of low socioeconomic status. A recent case study mentioned that “some of the concerns seen by childhood health professionals may not be diagnosable psychiatric conditions [i.e., specific medical conditions brought about from neurodevelopmental disorders], but emotional and behavioral [mental health] responses to family financial insecurity” (Jakovljevic et al., 2016).

Measures of Social Determinant of Health

Regarding the socioeconomic status of residents, Burke County ranks 33rd out of 100 (counties) to report 40.5% of their total population living below 200% of the federal poverty line in 2020 (Burke County: Social and Economic Factors, n.d.). From the total population of 87,642 documented in 2020, nearly half (35,476) of the county's residents had household incomes below \$5,203 (per month for a family of 4) (Poverty Guidelines in 2022, n.d.). Concerning the prevalence of ACEs, previous studies have recorded 23.6% of children to have been in situations where at least one parent has been incarcerated, they have seen violence in their neighborhood, and been victimized by poverty (Healthy North Carolina 2030, n.d.). Among the data are disparities that show children who reside in lower income households, require special education, and live with a single-parent or non-married parents are at a higher risk for suffering from ACEs and dropping out of school (Healthy North Carolina 2030, n.d.). To measure poverty levels and the prevalence of ACEs within the priority population, information concerning free and reduced lunch will be collected. The differences in the data regarding poverty among Burke, McDowell, and Caldwell counties can be seen in Table 1 (see Appendix B).

Recommendation

Recent data has provided a substantial amount of evidence to prove that education and health outcomes have a causal relationship. After analyzing and evaluating limited access and poor-quality education as a determinant of health, evidence-based research highly recommends that the Burke County Board of Commissioners, community partners, and residents provide further attention to education access and quality as a way to address the county's top health priority, which is mental health. To improve childhood mental health and reduce the negative impact on middle school academic performances, all stakeholders should consider adopting a pilot after-school program that will focus on and provide an evidence-based form of mental health treatment (e.g., yoga, dance, or exercise) to effectively alleviate some of the pressures formed from the ACEs (Sparr et al., n.d.). Therefore, ensuring that children have access to quality education – enrichment programs and extracurricular activities – will improve health outcomes and promote a healthy sustainable future and economy for Burke County.

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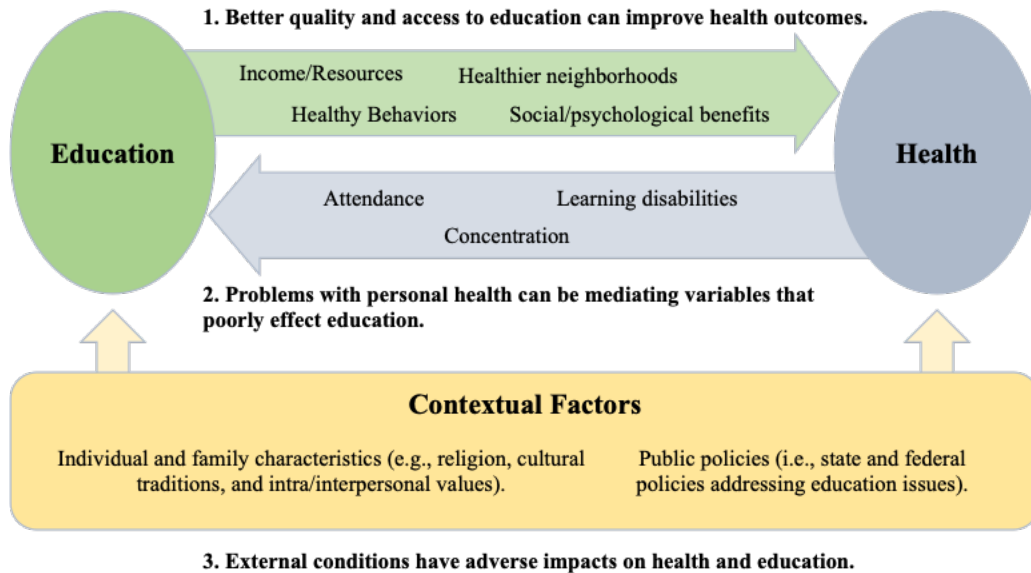
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Appendix C.1a: Figures and Tables

Figure 1.

Association Between Education and Health



Note: This figure was recreated but the format was obtained from Center on Society and Health, 2015.

Table 1.

Prevalence of Poverty in Burke and Neighboring Counties in North Carolina

Measure of Occurrence	Counties in North Carolina		
	Burke County	McDowell County	Caldwell County
Prevalence of Poverty	40.5% ^[1]	37.1% ^[2]	39.5% ³

Note: The data in this table shows that Burke County has a higher prevalence of poverty when compared to its neighboring counties Caldwell and McDowell.

¹ *Burke County: Social and Economic Factors.* (n.d.)

² *McDowell County: Social and Economic Factors.* (n.d.).

³ *Caldwell County: Social and Economic Factors.* (n.d.).

Appendix C.2: Concentration Deliverable 1 – Quality

Education Access and Quality

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; *Mental Health in Schools*, n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; *Mental Health in Schools*, n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases attainment for

higher academic learning that can improve health outcomes and promote a healthy future for Burke County.

Continuous Quality Improvement

Problem Statement

As described by the Center for Disease Control and Prevention, adolescent mental health illnesses are considered to be “severe alterations in the child’s ability to achieve social, emotional, cognitive, and academic millstones and to function in daily settings” (Mental Health Risk Factors, n.d.). In 2022, Burke County’s community health assessment listed poor mental health as a top priority. This report noticed one aspect of this issue to be associated with the problem of education access and quality for adolescents in public middle schools. There are four components that provide a breakdown of this problem which involve: 1) low academic performances; 2) adolescent mental health disorders; 3) adverse childhood experiences; and 4) poverty. Each component builds off one another explaining that poor grades and test scores can be caused by anxiety, depression, or unhealthy behaviors that result from exposure to undesirable events often brought upon by poverty. If there are no attempts to develop and implement a public health intervention, then the county will continue to see delays in academic progress and higher rates of at-risk youth.

Aim Statement

In an effort to effectively increase academic performances and reduce mental health disorders (e.g., mood, attention, behavior, and anxiety) in adolescents of middle school age (11-13 years old), our project team has a mission to redesign the existing system by utilizing mental health education resources to strengthen scholastic achievement of students from underprivileged populations (i.e., low socioeconomic areas). The program envisions a community where adolescents grow to become mentally healthy individuals that will lead, aspire, and inspire future generations towards enhancing education attainment to improve population health. Hence, this public health intervention aims to place an after-school mental health curriculum at three of the seven middle schools in Burke County by July 2034.

With values reflecting on community, education, health, and quality, the program has the potential to address the unmet activity 10.2 (see Appendix A) found in the county's health department reaccreditation site visit report. This unmet activity negatively impacts the community by not focusing on the importance of public health interventions which can offer continuous quality improvement methods to health agencies by evaluating effectiveness measures.

Processing Measures

The ED-AMH program will operate under two main goals, being to encourage higher academic learning and support positive socio-emotional, behavioral, and physical health. With the core components of this pilot after-school program being education and mental health, the contents will involve a 17-week curriculum during the spring semester; three days a week; 150 minutes (about 2 and a half hours) each day. In addition, the curriculum will consist of modules focusing on ways to healthily regulate emotions and eating habits, problem-solve, and effectively communicate with other individuals. Also, there is the expectation for the students to learn about concepts and theories related to the science of learning such as self-efficacy and self-regulation. Weekly activities will offer community building and service, physical exercise, journaling, yoga, dance, and mindful exploring. It is important to note that the ED-AMH program is modeled from other after school mental health education programs found in the literature to be cost efficient and positively effective towards improving academic performances and mental health disorders (Sparr et al., n.d.).

To track the performance of the program, our project team will collaboratively work to monitor outputs, processing, balancing and outcome measures (see Appendix B). The processing measures will include observing the number of students actively participating in the after-school program activities and weekly check-ins with their school counselor. One output and balancing measure will be more community involvement in education and determining the number of students that still show delays in academic achievement. A short-term outcome is to see at least 10 percent of the students participating in the program having a better understanding of how to cope with certain adverse situations. One of the long-term outcomes the program expects to develop is a 28 percent increase in academic performances.

Stakeholder Engagement

The internal and external customers (i.e., the users of the new system) range from a variety of stakeholders that are impacted by the causes and effects (see Appendix C) of the issue in hand. The internal customers are the children, parents, and school officials whereas the external customers involve local organizations, associations, and health agencies. Implementing the improvement process will directly affect the internal customers as children will be encouraged to engage in these after-school activities and the parents will be asked to complete surveys of how their child is behaving at home. As for the local external customers, they will be persuaded to provide more resources to support the program.

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Appendix C.2a: Figures and Tables

Table 1.

Burke County Health Department Unmet Activities

Activity 4.3
Description¹ : The local health department shall have access to and consult with a Masters or Doctoral level epidemiologist when necessary to fully investigate and diagnose health problems and hazards within the community.
NCLHDA Findings² : The Site Visitors found that the department was unable to provide evidence of consultation with an epidemiologist to meet the requirements for this activity.
Impact on Community : Little to no public health surveillance.
Activity 10.2
Description¹ : The local health department shall carry out or assist other agencies in the development, implementation, and evaluation of health promotion/disease prevention programs and educational materials targeted to groups identified as at-risk in the community health assessment.
NCLHDA Findings² : The Site Visitors found that the department was unable to provide any evidence of evaluation of educational materials developed and targeted to an at-risk group identified in the CHA.
Impact on Community : Minimal effort for public health intervention.
Activity 25.2
Description¹ : The local health department shall work with at least two academic institutions and other programs such as universities, colleges, community colleges and Area Health Education Centers to facilitate research and evaluation of public health programs and issues.
NCLHDA Findings² : The Site Visitors found that the department could only submit one piece of evidence of working with a program or institution demonstrating research or evaluation.
Impact on Community : Inadequate research shunts growth and priority public health issues go unnoticed.

¹ *Burke County Health Department Reaccreditation Site Visit Report.* (n.d.).

² *Burke County Health Department Reaccreditation Site Visit Report.* (n.d.).

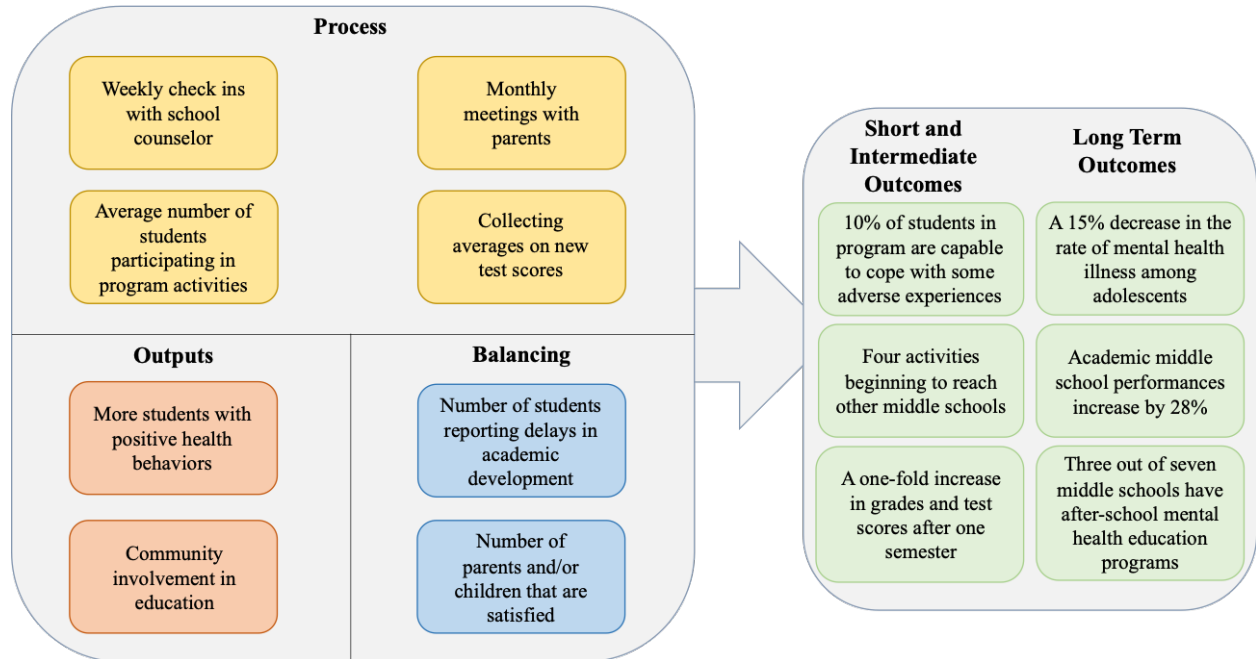
Activity 26.3
Description¹: The local health department shall assure that agency staff receives training in cultural sensitivity and competency.
NCLHDA Findings²: This activity requires all staff to have cultural sensitivity/competency training. The Site Visitors found multiple records that did not have evidence provided.
Impact on Community: Prevents awareness and appropriate treatment towards different cultures.
Activity 30.6
Description¹: The local health department shall ensure cleaning, disinfection and maintenance of clinical and laboratory equipment and service areas and shall document all cleanings, disinfections, and maintenance.
NCLHDA Findings²: The Site Visitors found that environmental health did not provide policies and procedures (including a comprehensive equipment list), supported by evidence-based practice, related to cleaning, disinfection, and maintenance of environmental health field equipment AND since the previous site visit, no evidence of implementation of policies and procedures for assuring cleaning, disinfection and maintenance of field equipment was provided.
Impact on Community: Uncleaned and unkempt environments do not promote the best health safety and quality
Activity 30.8
Description¹: The local health department's hours of operation shall be based on documented community needs.
NCLHDA Findings^{III}: The Site Visitors found that the department was unable to provide evidence of agency evaluation of consumer and community input regarding hours of operation since the previous site visit.
Impact on Community: Little presence of commitment to community engagement and involvement

¹ *Burke County Health Department Reaccreditation Site Visit Report.* (n.d.).

² *Burke County Health Department Reaccreditation Site Visit Report.* (n.d.).

Figure 1

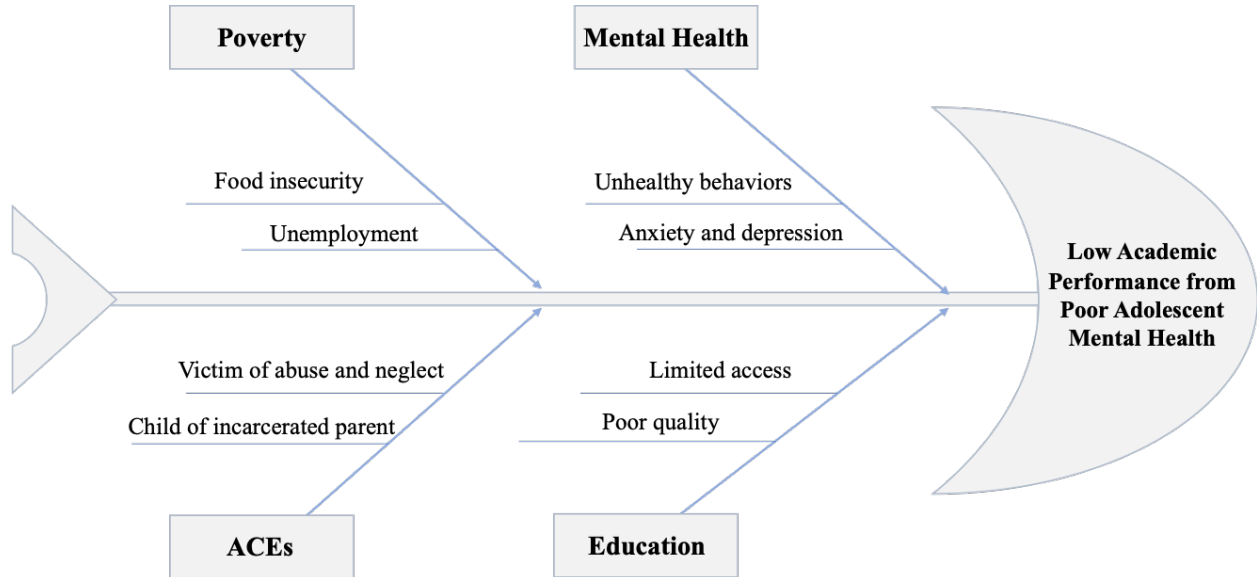
Processing Measures for the EmpowerED: Adolescent Mental Health Program



Note: This figure illustrates how monitoring process, outputs, and balancing measures can help lead to the desired outcomes of the ED-AMH program.

Figure 2

Fishbone Diagram of Cause and Effect



Note: This fishbone diagram shows that problems stemming from education, mental health and exposure to ACEs and poverty contribute to low academic performances and poor mental health among adolescents.

Appendix C.3: Concentration Deliverable 2 – Policy

Part I. Problem Analysis

Education Access and Quality

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion., n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; *Mental Health in Schools*, n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; *Mental Health in Schools*, n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases attainment for

higher academic learning that can improve health outcomes and promote a healthy future for Burke County.

Childhood Mental Health and Impact on School Performance [see Appendix B.2]

The first concentration deliverable discusses local and state policies that have direct and indirect impacts on improving adolescent mental health and academic performance for middle school students. One direct policy was initiating the Burke County's Student Services Department that brings to the center of attention improved academic and mental health outcomes for public school students. This policy coincides with its indirect counterpart being the Health-e-Schools program which uses telehealth to provide more reach to students in need of healthcare services. Overall, the first deliverable highlighted the significance of mapping out policy alternatives with goals surrounding community impact, health equity, feasibility, and cost-efficiency.

Problem Statement

In Burke County's recent community health assessment, mental health was listed as a top priority and associated with the problem of education access and quality for adolescents in public schools. Four components provide a breakdown of the problem public schools face in Burke County. The four components are: 1) low academic performance; 2) adolescent mental health disorders; 3) adverse childhood experiences; and 4) poverty. Each component builds off one another explaining that poor grades and test scores can be caused by anxiety, depression, or unhealthy behaviors that result from exposure to undesirable events often brought upon by poverty. Existing policies, as mentioned, do not necessarily accomplish the goals laid out in this policy analysis, which would help alleviate the problem.

Part II. Policy Analysis

Goals of Policy Analysis

The goals of this policy analysis are to ensure that the chosen policy alternative is politically feasible, easily implemented, cost effective for resources to the county, positively impactful on the community, and improves health equity. Each of these goals will be used as criteria to assess every policy option (see Appendix B). As with all policies, no matter local, state, or federal, it is necessary for there to

be support from multiple legislators that will advocate and vote to enact the policy. It is also essential for it to be feasibly implemented in society so that communities and public schools will agree to the change. Generally, policies that do not require an ample amount of money to enforce have a higher probability of succeeding and provide a fiscal benefit to the county as needed funds can be allocated elsewhere. The policy's crucial targets are to ensure there will be improvements to adolescent mental health and academic performances along with advances in health equity.

Policy Strategies and Solutions

This policy analysis examines three policy options providing different outlooks on how to address the low academic performance among adolescents suffering from mental health disorders in public middle schools. Each policy was objectively evaluated and weighed by five criteria. The three policy options are as followed: 1) maintaining the status quo; 2) granting public schools to receive more funding to staff additional school counselors and psychologists; and 3) mandating existing public schools to allow all students to participate in after-school programs (i.e., extracurricular activities).

Policy Option 1: Maintain the Status Quo

Maintaining the status quo would mean keeping the existing policies without any change or reform. This option would not require any legislative action; therefore, it gives a score of a “5” as it would be highly politically feasible. Implementing this policy option would not be difficult as it is currently standing in society, which gives a score of a “5”. Recently, Burke County reported that 46% of individuals living under 100% FPL (federal poverty line) are children (*Burke County Community Health Assessment 2022, 2022*). Child poverty leads to increased healthcare costs, lower economic growth, and more incarceration (Rank, Eppard & Bullock, 2021). As there would be no positive changes to child poverty, the cost to county would be high. This gives a score of “1”. Also, there would be little to no positive effect on health equity as current problems would continue with no change. Likewise with impact on community, mental health illnesses among adolescence would still negatively impact their grades and test scores giving scores of “1” for both criteria.

Policy Option 2: Grant More Funding to Staff Additional Counselors and Psychologists in Public Schools

For this policy option, the political feasibility score is a “3” because this policy does include requesting additional funds, which some legislators may not be supportive of. Implementation feasibility is a score of a “5” given that parents and students are more welcoming to school counselors and psychologists. Cost to county score is a “3” as this would require the county to allocate more funds to supplement this option resulting in some cost burden for the county. This alternative would only see to it that additional counselors and psychologists are staffed but would not expand on the reach of their services to students. This gives a score of a “3” for both health equity and impact on community.

Policy Option 3: Mandate Existing Public Schools to Allow All Students to Participate in After-School Programs

Burke County’s public school policy code 3620 on extracurricular activities states that “participation in extracurricular activities, including student organizations and interscholastic athletics, is a privilege, not a right, and may be reserved for students in good academic standing who meet behavior standards established by the Board, the Superintendent, or the school” (Burke County Public Schools, 2022, Extracurricular Activities and Student Organization section). Mandating existing public schools to allow all students to participate in after-school programs would grant every student, no matter their academic standing, a chance to improve and excel. This gives a score of a “5” for health equity and impact on community. Also, this policy option would not be difficult to receive support from other legislators nor would it be hard to implement in society. This gives both criteria a score of “5”. Lastly, as there is no request for additional funding, the cost to county score is a “5”.

Recommendation

After evaluating each policy option by the five criteria (see Appendix C), our project team recommends the county to pursue policy option 3 to address low academic performances among adolescents with mental health disorders in public middle schools.

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Appendix C.3a: Figures and Tables

Box 1.

Policy Criteria and Assessment

<p>Goal 1 – Political Feasibility <i>Definition:</i> The probability the policy option will receive bipartisan or partisan support from other legislators. <i>Directionality:</i> A score of “1” indicates no chance of policy receiving any advocacy or support from legislators. Whereas a score of “3” signifies a possibility of support and a score of “5” determines an increase probability of strong support. <i>Weight:</i> 2x</p>
<p>Goal 2 – Implementation Feasibility <i>Definition:</i> The likelihood a policy option will have at being accepted in society. <i>Directionality:</i> A score of “1” indicates no chance of policy being implemented in society. Whereas a score of “3” shows some chance of implementation and a score of “5” indicates a high likelihood of the policy being implemented. <i>Weight:</i> 1x</p>
<p>Goal 3 – Cost to County <i>Definition:</i> The cost burden of implementing and sustaining the policy including resources within the county. <i>Directionality:</i> A score of “1” indicates an increased burden of cost on the county. Whereas a score of “3” signifies some cost burden and a score of “5” indicates no cost burden on the county. <i>Weight:</i> 1x</p>
<p>Goal 4 – Health Equity <i>Definition:</i> The positive influence the policy can have towards reducing health disparities and inequities <i>Directionality:</i> A score of “1” indicates no improvement towards health equity. Whereas a score of “3” shows some positive potential for health equity and a score of “5” implies a greater potential for advancing health equity in the county. <i>Weight:</i> 3x</p>
<p>Goal 5 – Impact on Community <i>Definition:</i> The likelihood a policy option would benefit adolescent mental health and academic performances <i>Directionality:</i> A score “1” indicates no meaningful impact on the community. Whereas a score of “3” means some beneficial impact and a score of “5” indicates a higher impact on the community. <i>Weight:</i> 3x</p>

Table 1.

Policy Alternatives to Addressing Low Academic Performances and Adolescent Mental Health

Policy Option	Feasibility		Cost to County	Health Equity	Impact on Community
	Political	Implementation			
<i>Weight</i>	2x	1x	1x	3x	3x
Maintain the Status Quo	5	5	1	1	1
Require Additional Funding	3	5	3	3	3
Mandate Student Participation	5	5	5	5	5
Totals					
Maintain the Status Quo = 22 Require Additional Funding = 32 Mandate Student Participation = 50					

APPENDIX D: AMANDA REINHOLD INDIVIDUAL DELIVERABLES

Appendix D.1: Individual Social Determinant of Health Analysis

Social Determinants of Health (SDOH)

According to the U.S. Department of Health and Human Services (n.d.), the social determinants of health (SDOH) are environmental conditions where people live, learn, work, and more that affect their health, well-being, and quality-of-life. SDOH are categorized into five areas: Health Care Access and Quality, Economic Stability; Education Access and Quality; Neighborhood and Built Environment; and Social and Community Context (Office of Disease Prevention and Health Promotion, n.d.). Education Access and Quality is especially important given that education is closely associated with life expectancy and health behaviors. Moreover, education shapes opportunities, employment, and income, which all affect an individual's short and long-term health status and outcomes (The Lancet Public Health, 2020).

Mental health, a key component of a healthier life, is especially relevant to Education Access since adolescents report poorer mental health today (Centers for Disease Control and Prevention [CDC], n.d.). Anxiety and/or depression in youth can have a variety of causes, including Adverse Childhood Events (ACEs) that are often linked to poverty and can cause lower grades, higher school absenteeism, and more suspensions short-term (Stewart-Tufescu et al., 2022). Longer-term, unaddressed ACEs, anxiety, and depression are associated with dropping out of school, unemployment, substance abuse, and potentially early death (National Alliance on Mental Illness [NAMI], n.d.).

To effectively address ACEs and conditions like anxiety and depression, it is important to provide mental health care within schools (CDC, n.d.). A recent study by the U.S. Department of Health and Human Services indicated that adolescents are more comfortable using health care services at in-school clinics, and their families are also trusting in these services (Youth.gov, n.d.). Our project team will consider Burke County, North Carolina a microcosm to analyze and prove the positive impact of education on youth mental health.

Geographic and Historical Context: Burke County

Burke County is in the west central part of North Carolina's Mountain region and home to approximately ninety thousand citizens. From 1,000 AD into several centuries later, it was the center of the largest Native American settlement in North Carolina (Burke County Government, n.d.-b); however, its demographic makeup today is primarily White/Non-Hispanic residents at 82% (see Appendix Figure 1) (Burke County Government, n.d.-a). Burke County's median age is 44.3 years, and 18.7% of its population is under 18 years old (see Appendix Figure 2) (Burke County Government, n.d.-a). The county has a diverse economy including "industrial products from technological, furniture, medical, chemical, machine and textile manufacturers," as well as a strong tourism industry (Burke County Government, n.d.-b). Burke County has 26 schools and 11,632 students—of which, 40% are of minority racial status and 39.7% are economically disadvantaged (U.S. News Education, n.d.).

According to County Health Rankings and Roadmaps, Burke County ranked 49th of 100 North Carolina counties in 2022 for health outcomes and factors (County Health Rankings & Roadmaps, n.d.). Around 22% of Burke County residents were considered in poor or fair health, which is four points higher than North Carolina's average. Relevant areas of opportunities for Burke County include its high school completion rate (in 2022, seven points lower than the North Carolina average) and percentage of children living in poverty (in 2022, 12 points higher than the North Carolina average) (see Appendix Figure 3) (County Health Rankings & Roadmaps, n.d.).

Priority Population

To address ACEs and subsequent mental health challenges, the project team suggests analyzing low-income, middle school children (ages 11-13 years old) attending one of the seven middle schools in Burke County (U.S. News Education, n.d.). This age group is important considering that one in six U.S. youth (ages 6-17 years old) experience a mental health disorder each year, where the most common conditions include ADHD, behavior problems, anxiety, and depression (NAMI, n.d.).

Poverty is another key population factor since it is linked with an increased risk for ACEs, as well as psychological disorders that persist into adulthood (Hodgkinson et al., 2017). Between 2017-2020,

42% of Burke County’s total population live under 200% of the Federal Poverty Level (FPL). Children make up the highest percentage of individuals in Burke County living below 100% of the FPL (see Appendix Figure 4) (Burke County Government, n.d.-a). The FPL—a measure of income issued by the U.S. Department of Health and Human Services (HHS) each year—indicates families’ eligibility for certain aid programs and benefits, including Medicaid, Children’s Health Insurance Plan (CHIP), and the National School Lunch Program (Health.gov, n.d.).

Measures of Social Determinant of Health

Measuring the impact of Education Access and Quality on youth mental health involves two components. First, the project team would suggest identifying the priority population of interest (lower income 11–13-year-olds) by reviewing data on the National School Lunch Program, a federally assisted meal program, at all seven of Burke County’s middle schools (U.S. Department of Agriculture [USDA], n.d.). Second, the project team would measure anxiety and depression of middle school students—including baseline at the start of an intervention, along with post-intervention to understand program success. To accomplish the latter, the project team would provide a valid data tool that collects general anxiety and depression data from students with their parents’ or guardians’ consent.

Rationale/Importance

As suggested, Education Access and Quality is critical to promoting healthier youth and their mental health. Schools can fill gaps in mental health diagnosis and treatment—especially for lower income families—by offering a “unique opportunity for early identification, prevention, and intervention” that meets students where they already are (NAMI, n.d., Why We Care section, para. 2). Interventions in schools ensure all students have access to support for anxiety and depression, and schools often have existing resources that can be leveraged in cost-effective ways toward new programs and/or care delivery models.

Burke County’s 2022 Community Health Assessment affirms the importance of addressing mental health (its “priority one” issue in 2022) and involving schools in potential interventions. Their 2022 CHA acknowledges how the COVID-19 pandemic challenged Burke County’s education system

and revealed mental health as one of its three priority areas to address for students going forward (Burke County Government, n.d.-a). An intervention targeted at Burke County's middle school students not only supports progress toward its community goals; but also, contributes to broader health benefits. Education Access and Quality supports earlier identification and treatment of mental health issues that improves health outcomes and lowers long-term costs (NAMI, n.d.).

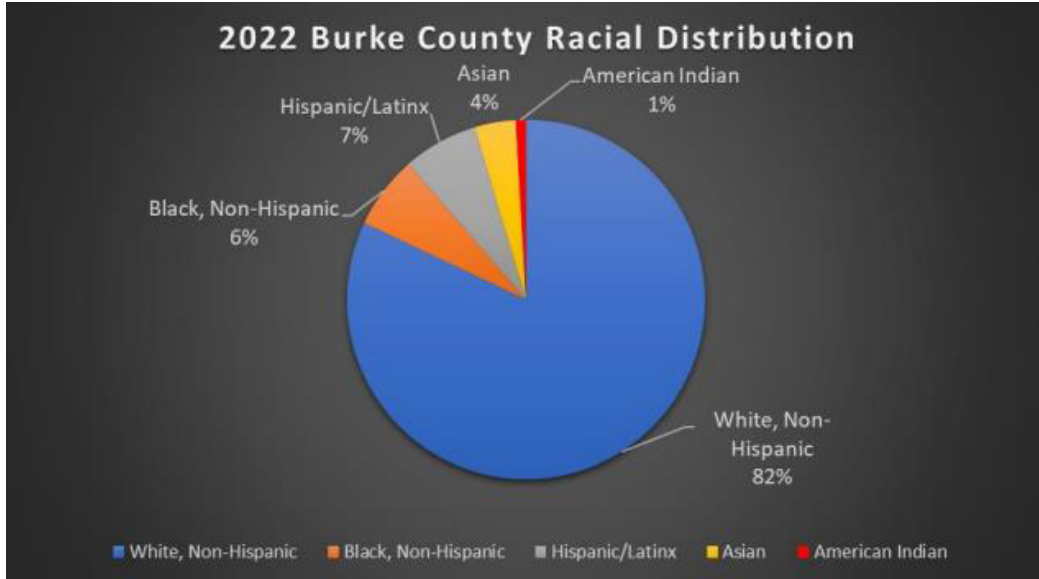
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Appendix D.1a: Figures and Tables

Figure 1.

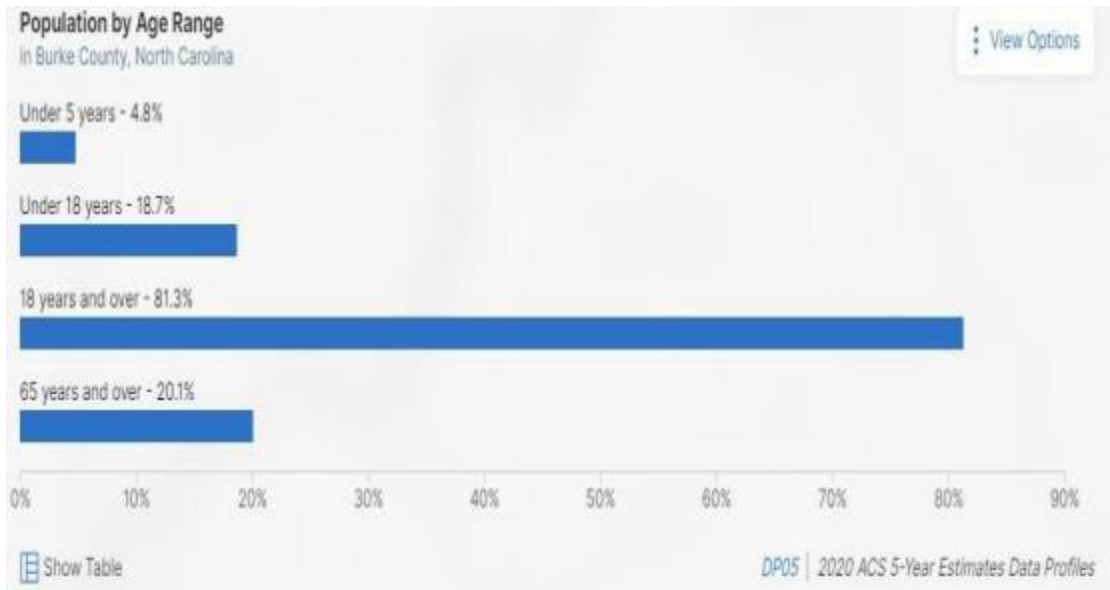
Demographic Characteristics in Burke County



Source: 2022's Burke Community Health Assessment

Figure 2.

Ages in Burke County



Source: 2022's Burke Community Health Assessment

Figure 3.

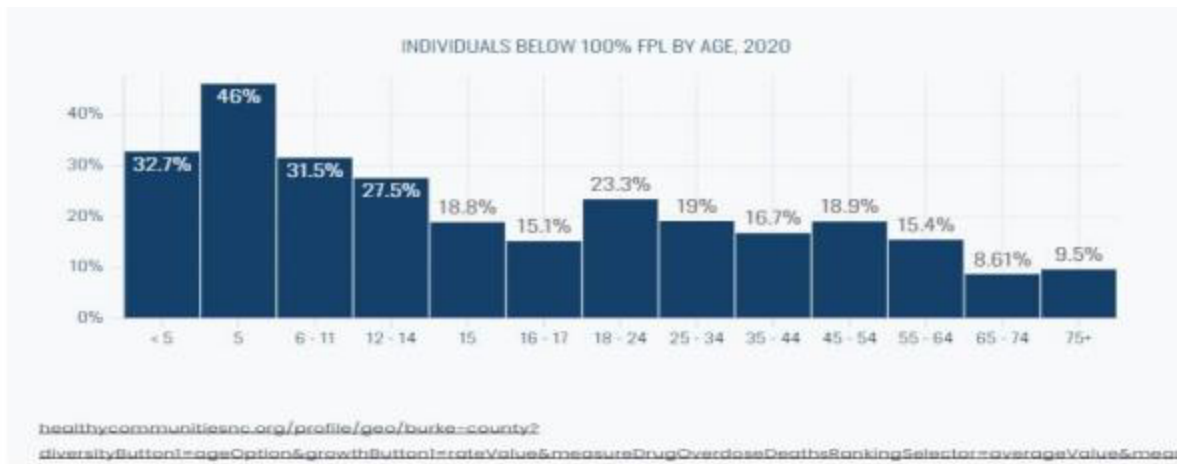
Social & Economic Factors in Burke County, as of 2022

Social & Economic Factors	Burke County	North Carolina	United States
High School Completion	82%	89%	89%
Some College	54%	68%	67%
Unemployment	7.2%	7.3%	8.1%
Children in Poverty	30%	18%	16%
Income Inequality	4.2	4.7	4.9
Children in Single-Parent Households	25%	27%	25%
Social Associations	13.6	11.3	9.2
Violent Crime	179	351	386
Injury Deaths	101	82	76

Source: County Health Rankings & Roadmaps

Figure 4.

Poverty by Age



Source: 2022's Burke Community Health Assessment

Appendix D.2: Concentration Deliverable 1 – Engagement

Introduction

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; National Alliance on Mental Illness [NAMI], n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; NAMI, n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases attainment for higher academic learning that can improve health outcomes and promote a healthy future.

Community Partner Mapping and Analysis

A variety of stakeholders would be engaged to support the *EmpowerED: Adolescent Health Program* pilot in Burke County. They are organized via two stakeholder mapping tools. First, a Power-Interest Grid identifies and categorizes the top ten relevant stakeholders based on interest in addressing youth mental health, as well as ability to influence an intervention (see Appendix A). The stakeholders with the highest influence and interest include LMS counselors and psychologists, school administration, LMS families, and the Burke County Public Health Department. Stakeholders on the grid at high influence but potentially lower interest levels include leaders of the broader school district (i.e., Superintendent and School Board).

Building off the Power-Interest grid, the project team pulled the stakeholders identified as high interest and/or influence and rank ordered them in tool #2—a Stakeholder Matrix (see Appendix B). The matrix defines anticipated engagement, which rationalizes including nine stakeholders as community partners on an SDOH Task Force. The first stakeholder, LMS School Counselors and Psychologists, are licensed, existing resources who could lead an in-school mental health program. The second stakeholder group, LMS leaders, would approve decisions and funding for the pilot mental health program. The third and fourth stakeholders—families of LMS students and Burke County Public Health Department—would provide insights on children’s day-to-day behaviors and potential trends across the county, respectively. Following the Public Health Code of Ethics, the project team will ensure all families can participate in the engagement process, including best efforts to address relevant barriers (including but not limited to lack of transportation, childcare, and translation services) (American Public Health Association [APHA], (2019). It will be especially important that lower income families are represented since those children are the target population of the proposed intervention.

The final five community partners (see Appendix B) would also be engaged. The Burke County Public School Student Services Department is a centralized collaboration of the district’s counselors, social workers, and school nurses that support a variety of programs centered around students’ overall wellbeing (Burke County Public Schools, n.d.). Like the Burke County School Board, they would be

involved in an LMS intervention; however, they may not have the capacity to lead a program (Burke County Schools, n.d.). Similarly, Focus Behavioral Health Services, LLC, a local organization that serves youth with mental health issues, would be helpful to consult. They too would not have capacity nor financial incentive to lead an intervention (*Burke County Mental Health Resources*, 2023). Lastly, LMS students and teachers both provide regular feedback and benefit from an after-school mental health program. Following the Public Health Code of Ethics, the project team will recruit a diversity of stakeholders in terms of race, ethnicity, gender, and migration status (APHA, 2019); and, as previously stated, it will be important to include lower income students given the pilot program's focus.

One key factor that the task force will consider are challenges involved in recruiting lower income stakeholders, including identifying the potential pool of participants, minimizing stigma, and reducing barriers to meaningful participation. In terms of candidate pool, 12.6% of Burke County residents live in poverty, which is not significantly higher than the U.S. national poverty rate of 11.5% (United States Census Bureau, n.d.; United States Census Bureau, 2024). To recruit lower income families, the project team will partner with Burke County School District and use existing communication channels to families participating in the National School Lunch Program (North Carolina Department of Public Instruction [NC DPI], n.d.). The families will be notified of an incentivized opportunity to further influence a pilot school-based mental health program. To minimize stigma in engagement efforts, the project team will prioritize empathy, accessibility, and transparency (De Weger et al., 2022). Tactically, these values will be enforced by committing to open, two-way dialogues on expectations, progress, and outcomes, as well as facilitating stakeholder meetings online or in-person at a central meeting location (Liberty Middle School to meet families where they are). For in-person meetings, for example, the project team would offer transportation (i.e., compensated rideshare or public transit services), provide childcare services during the meetings, and have snacks and refreshments available.

A second key factor that the task force will need to consider is stakeholders' internet access. According to the 2022 Burke County Community Health Assessment (CHA), "approximately 35% of [Burke County Public School] students did not have high-speed internet at their house during the 2020-

2021 school year” and of that 35% “25% of those families cannot acquire broadband connections due to living in rural communities" (n.d.). While the project team plans to host several of its meetings in-person, they will need to ensure comprehensive, non-internet tactics to foster ongoing participation in between meetings. These tactics may include printed materials and phone conversations. If they rely only on emails, website updates, and Zoom meetings, they may lose key participants throughout the process.

Reflections and Conclusions

There are a few important questions the project team would pose to a subset or all community partners. First, to get a sense of community partners’ aspirations for a school-based mental health intervention, the project team might ask, “What kind of changes would you like to see in the next five years? How would you affect these changes?” Second, to better understand strengths of both the school community and families of students, the team might ask, “What are your most valuable resources and strongest assets [to improve mental health in adolescents]?” Finally, to better understand the ways they work, the team might ask questions like, “What kinds of services do you/your organization provide to the community? What kinds of projects are you/your organization involved in now? What have you accomplished?” (*Section 8. Identifying Community Assets and Resources*, n.d.).

These questions, and the community partner mapping exercise overall, are critical to ensuring the project team meets the needs of those affected by and affecting mental health in lower income, middle school students of Burke County. The project team’s strengths include their collective public health backgrounds; grasp on community engagement principles; and use of key community partner mapping tools (see Appendices A and B). The project team acknowledges limitations of this analysis, including lack of physical presence in Burke County, lack of direct contact (i.e., online research only), and limited time to conduct research. Despite these limitations, the project team is confident in the value of engaging relevant stakeholders and a key issue through its SDOH task force.

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Appendix D.2a: Figures and Tables

Figure 1.

Stakeholder Power/Interest Grid

<p>High Influence / Low Interest (Meet Needs)</p> <ul style="list-style-type: none"> • Burke County Public Schools Superintendent • Burke County Public School Board 	<p>High Influence / High Interest (Key Player)</p> <ul style="list-style-type: none"> • School Counselor(s) and Psychologist(s) • Liberty Middle School (LMS) Leaders / Administrative Staff (i.e., Principal) • Families of LMS students • Burke County Health Department
<p>Low Influence / Low Interest (Keep Informed)</p> <p>N/A</p>	<p>Low Influence / High Interest (Show Consideration)</p> <ul style="list-style-type: none"> • LMS teachers • Burke County Public Schools Student Services Department • Focus Behavioral Health Services, LLC • LMS students

Note: The table above includes the top 10 relevant stakeholders for addressing mental health for low-income middle school students in Burke County, NC.

Table 1.

Stakeholder Matrix

Community Partner	Areas & Level of Influence / Impact	Engagement Approach	Strategies for Obtaining Support &/or Reducing Obstacles	Engagement Tools
Liberty Middle School (LMS) Counselors and Psychologists	High - licensed resource to be leveraged for program	Empower	Potential incentives for taking on additional work outside 9-2 hours	Emails; staff meetings; in person or online SDOH taskforce meetings
LMS Leaders / Admin Staff	High - approves funding and components of program for LMS	Collaborate	Clearly outline strategic plan / benefits to cost analysis, etc.	Emails; staff meetings; in person or online SDOH taskforce meetings
Families of LMS Students	High - encourage schools to pursue program; provides consent for child	Involve	Regular communication in variety of channels; remove any admin burdens for parents to give consent for child to participate	Emails; in person or online SDOH taskforce meetings (incentivized)
Burke County Public Health Department	High – especially if they are seeing youth struggling with mental health across the county	Collaborate	Present school-based program as a complementary resource to programs run by public health department	Emails; in person or online SDOH taskforce meetings
Burke County School Board (inclusive of Superintendent)	High – decision-making authority	Involve	Present in clear, concise manner given variety of priorities they must address	Emails; in-person Board meetings
LMS Teachers	Lower influence - strong pulse on need & day-to-day observations	Involve	Ensure they feel accountable to provide observations around problem & support execution on solution	Emails; staff meetings; in person or online SDOH taskforce meetings
Burke County Public Schools	Less direct influence - but may be called	Involve	Ensure they have bandwidth to focus	Emails; in person or online

Community Partner	Areas & Level of Influence / Impact	Engagement Approach	Strategies for Obtaining Support &/or Reducing Obstacles	Engagement Tools
Student Services Dept	on to implement & share best practices		on LMS for project implementation / specific time	SDOH taskforce meetings
Focus Behavioral Health Services, LLC	Lower influence - could provide expertise as local entity focused on youth mental health	Consult	Present school-based program as a complementary resource (not a competition to their business)	Emails; in person or online SDOH taskforce meetings
LMS Students	Lower influence - benefiting from program & provide regular feedback on it	Inform	Present intervention in a way that minimizes stigma / maximizes access	Printed signage / handouts at school; classroom meetings and presentations

Note: The matrix above focuses on High Interest or Influence stakeholders. These are listed in order of engagement priority.

Appendix D.3: Concentration Deliverable 2 – Systems

Introduction

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina 2030, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; National Alliance on Mental Illness [NAMI], n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; NAMI, n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Mental Health Program* – will partner with Liberty Middle School (LMS) to demonstrate how a pilot after-school mental health program can positively impact the educational experience of economically disadvantaged adolescents 11-13 years old. The program will provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate burdens resulting from ACEs (Sparr et al., n.d.). Access to education increases likelihood for higher academic learning that can improve health outcomes.

System We're Addressing [see Appendix F.2]

To deliver optimal health outcomes for Burke County, it was first necessary to understand the complex system and key actors (i.e., school faculty, families of students, and school district staff) affecting education access and adolescent mental health. This exercise is especially critical knowing that any wicked problem—like addressing mental health—is often caused by another problem (Rittel and Webber, 1973). As stated previously, the main concerns in the system are ensuring opportunities within schools to improve mental health and counter the effects of Adverse Childhood Events (ACEs) and low socioeconomic status. Challenges within the system include unintended consequences like stigma, isolation, lack of support, sustainability, or scalability. Assets within this system include federal funding, parental partnerships, district collaboration, and educator commitment (Eiraldi et al., 2015). On the note of assets, the team discussed the “success to the successful” causal loop archetype (see Appendix F.2), acknowledging that students who live in a higher income neighborhoods are more likely to have greater economic opportunity and educational experience, which further proves the need for focus on lower income 11–13-year-olds in Burke County (Braun, 2002).

Co-Design Scope and Objectives

To implement an effective *EmpowerED: Adolescent Health Program* intervention (prioritizing education access to improve mental health in adolescents), it is critical to co-design a solution with key community partners in Burke County. The “co” titling represents a true partnership and shared leadership. Co-design is a process where users and system actors not only provide feedback; but also, support decision-making based on their own perspectives and experiences (Bate & Robert, 2006). With this definition considered, the four recommended co-design partners include: Liberty Middle School (LMS) school psychologist and counselors; LMS students; families (often parents) of LMS students; LMS teachers; and LMS leaders and administrative staff (i.e., Principal). These partners are both critical and frequent users accessing education at LMS, and their insights would help shape and facilitate a sustainable intervention that uses education to improve the mental health status of 11–13-year-old students.

For an effective co-design effort, the project team recommends following key participatory design core concepts, as well as guidelines from the American Public Health Association (APHA)'s Public Health Code of Ethics. Four design core concepts for this effort include: focusing on transformation (promoting change for a better future); providing situation-based action (understanding issues in actual context); equalizing power dynamics (getting perspective from those who may be traditionally weaker in power structures); and building infrastructure for long-term partnerships (Luck, 2018). The team believes that abiding by these four key principles not only supports a transformative effort to help alleviate a wicked problem (mental health burden in adolescents); but also, supports a sustainable solution at Liberty Middle School that has input from more vulnerable populations (i.e., families of lower SES backgrounds) that are also targeted by this intervention.

Similarly, while the APHA's Public Health Code of Ethics includes many important principles for practice, the project team believes eight specific items (grouped in two categories) are particularly crucial. The first four—more people-oriented principles—ensure the project team establishes partnerships built on mutual understanding, trust, and shared decision-making to meaningfully address education and mental health issues toward a sustainable solution. The team suggests following these core APHA principles focused on people: empowering community stakeholders to participate; building partnerships based on mutual respect; designing with community members' input and being sensitive to local values; and avoiding unintentional stigma of specific groups (especially given the focus on lower income) (American Public Health Association (APHA), 2019). The second category of APHA principles—which the project team categorizes as “program effectiveness”—follows these three guidelines: ensuring public health practitioners use resources efficiently and effectively (especially knowing resources are limited in a public school system); incorporating research-based data as best as possible (given the team's commitment to an evidence-based public health approach); and developing a strategic plan with measurable or SMART” goals (CDC, 2020).

With these principles in mind, the team will practice an Experience-Based Co-Design (EBCD) approach to plan an intervention for Liberty Middle School in Burke County. EBCD will be useful since

the project team is focused on designing the “experience” of meeting students where they are (Liberty Middle School) to provide education and best practices (via an after-school program) that can improve students’ mental health. Unlike traditional design thinking, the team is not improving processes nor systems nor built environments. Instead, EBCD requires insight on the “subjective pathway” of current and ideal experience, and the team will rely on “stories and storytelling [as] the basis” for their work (Bate & Robert, 2006). Tactically, an EBCD approach at LMS will involve (in this order): establishing governance, roles, and responsibilities for the co-design team; engaging co-design users (LMS staff and students) and gathering their testimonies; hosting co-design meeting(s); and supporting the meeting of small co-design teams over a specified planning period (i.e., a three-month window) (Van Citters, 2017).

Personas, User Stories, Needs and Quality Characteristics

Given the importance of storytelling to EBCD, the project team has already leveraged tools to outline design needs for key stakeholders affected by education access and mental health at Liberty Middle School in Burke County. First, the team developed personas—a tool in user-centered co-design that provides deeper understandings of target audiences—for three key community partners: LMS students, LMS families (parents); and LMS school psychologist (see Appendix I, Table 1) (Haldane et al., 2019). Since LMS students are the primary recipient of the proposed after-school program or “experience,” the project team expanded on students’ potential worldview by providing a user empathy map sharing what students think, hear, see, and say around education access and improving their mental wellbeing (see Appendix 1, Figure 1) (UNC Gillings School of Global Public Health [UNC], 2022). An empathy map highlights these user emotions, while also contributing to “empathy design and research” by providing key insights, awareness, and sensitivities to the co-design team (Thomas & McDonagh, 2013).

Along with personas and an empathy map, the team also aligned on user stories (see Appendix 1, Table 2) to outline user needs around mental health education opportunities through Liberty Middle School. Building off user stories, the team also used the Kano model to prioritize user needs via a graph plot comparing degree of achievement (X-axis) to customer satisfaction (Y-axis) (see Appendix 1, Figure 2). On the graph, needs are categorized one of three ways: basic, performance (or “one-dimensional”),

and delighter (UNC, 2022). The project team identified two needs for each Kano Model category, as well as quality characteristics. The latter are features that the *EmpowerED: Adolescent Health Program* must have in place to prove it is meeting system user needs (UNC, 2022) (see Appendix 1, Table 3).

Design Brief

Before moving to the ideation phase of the design process, the final step in co-designing with Liberty Middle School community partners is creating a design brief or “summary of what the system design should do and for whom” (UNC, 2022). The project team identifies this Design Brief as such:

EmpowerED: Adolescent Mental Health Program will involve a 17-week curriculum during the spring semester; three days a week; 150 minutes each day. The curriculum will consist of modules focusing on ways to healthily regulate emotions and teach problem solving skills. Weekly activities will offer community building and service, physical exercise, journaling, yoga, dance and mindful exploring. These activities will be coupled with lessons on concepts and theories related to the science of learning (e.g., self-efficacy and self-regulation).

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Appendix D.3a: Figures and Tables

Table 1.

Personas for three key system actors

Persona	#1 - Student at Liberty Middle School from a lower income family	#2 - Father of two male students at Liberty Middle School	#3 - School psychologist at Liberty Middle School
Gender	Female	Male	Male
Age	12	34	29
Location/Housing	Three-BR apartment in Morganton, NC	Two-BR home in Morganton; inherited from family	One-BR apartment in Morganton
Family	<p>Raised by a single mother after her abusive father left their home (Centers for Disease Control and Prevention [CDC], n.d.)</p> <p>She has 1 brother in high school and 2 younger sisters in elementary school</p>	Married with two sons at Liberty Middle School (11 and 13 years old)	Married with no children yet
Interests/Career	<p>Outside of school, enjoys board games and playing soccer with local neighbors.</p> <p>She does not participate in any school activities since she helps babysit her younger sisters and helps with household chores.</p>	<p>Regularly attends church</p> <p>His career is a construction worker</p>	<p>Enjoys playing social sports in local leagues</p> <p>His career is the school psychologist at Liberty Middle School (Liberty Middle School, n.d.)</p>

Persona	#1 - Student at Liberty Middle School from a lower income family	#2 - Father of two male students at Liberty Middle School	#3 - School psychologist at Liberty Middle School
Influenced by	1) Immediate family (mother & siblings) Extended family; 2) Peers at Liberty Middle School; 3) Staff at Liberty Middle School; 4) Social media	1) His spouse and children; 2) Extended family; 3) Friends, colleagues, and local, social network (i.e., church community); 4) Staff at Liberty Middle School; 5) Social media; 6) News/other media	1) His spouse; 2) Extended family; 3) Colleagues at Liberty Middle School; 4) Career/academic network of other psychologists; 5) Friends and others in local, social network (i.e., local sports leagues he participates in); 6) Social media; 7) News/other media
Concerns	1) Her mother's endurance and ability to support four children with limited resources; 2) Stress of supporting younger siblings; 3) Inability to perform well in school due to stresses at home; 4) Avoiding drugs & alcohol, as her older brother is experimenting with these now	1) Lack of openness and communication between the father and his sons - i.e., he would not be aware of their potential mental health struggles; 2) Ability to deliver on financial needs for his family	1) Ensuring all students are represented equitably in school-based programming; 2) Limited funding and people resources to support school programs at Liberty Middle School; 3) Ensuring program is not single-threaded - i.e., ensure he is not the only "expert" available to support and maintain an after school program

Figure 1.

Empathy map

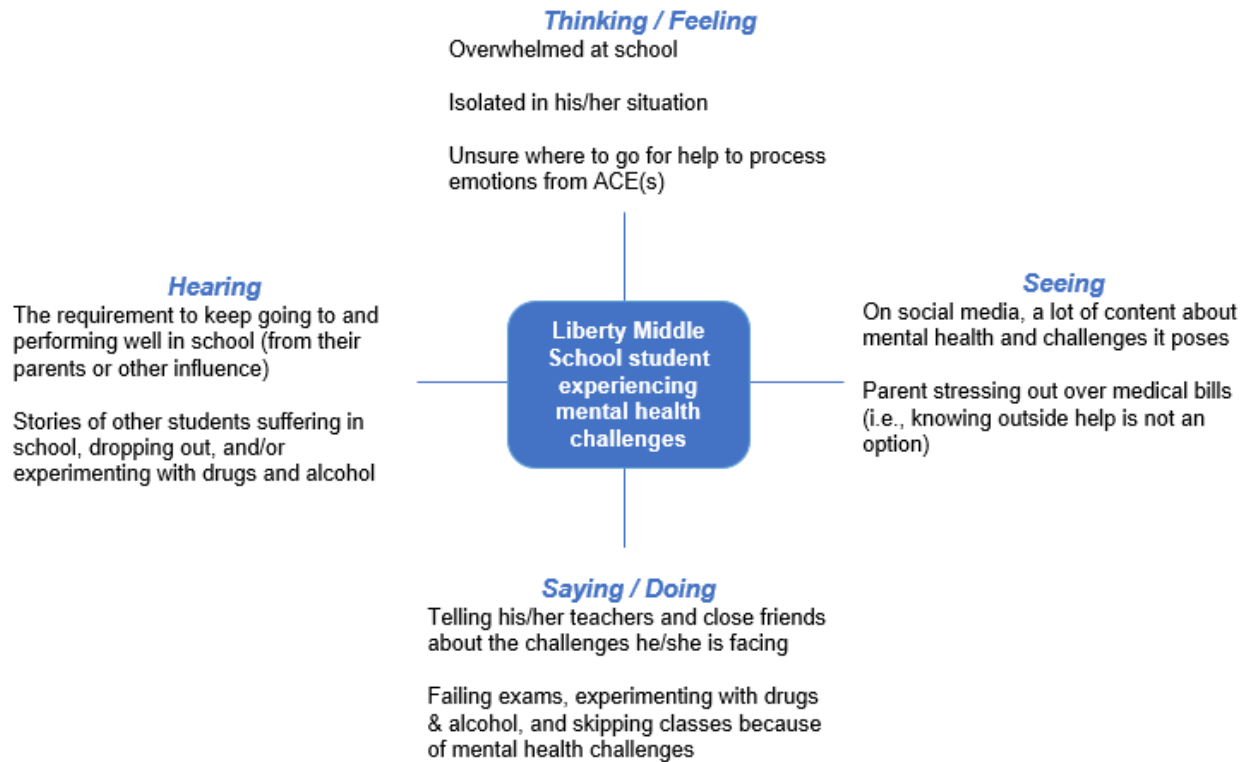


Table 2.

User stories

User	User Story
Student	As a student experiencing mental health challenges from childhood trauma I've experienced, I want professional support that is easily available to me, so I can continue pursuing my education and have a bright future ahead.
Parent	As a parent of a student experiencing mental health challenges, I want resources that meet my family "where we are" (i.e., school), so my children are not suffering and/or engaging in detrimental behaviors that could take away from long-term academic success and potentially health outcomes.
School Psychologist	As a school psychologist based at Liberty Middle School, I want partnership, resources, and support to implement a sustainable intervention (i.e., an after school program), so I can effectively lend my expertise and contribute to alleviating mental health burdens and improving education quality for students at my school.

Figure 2.

Kano model

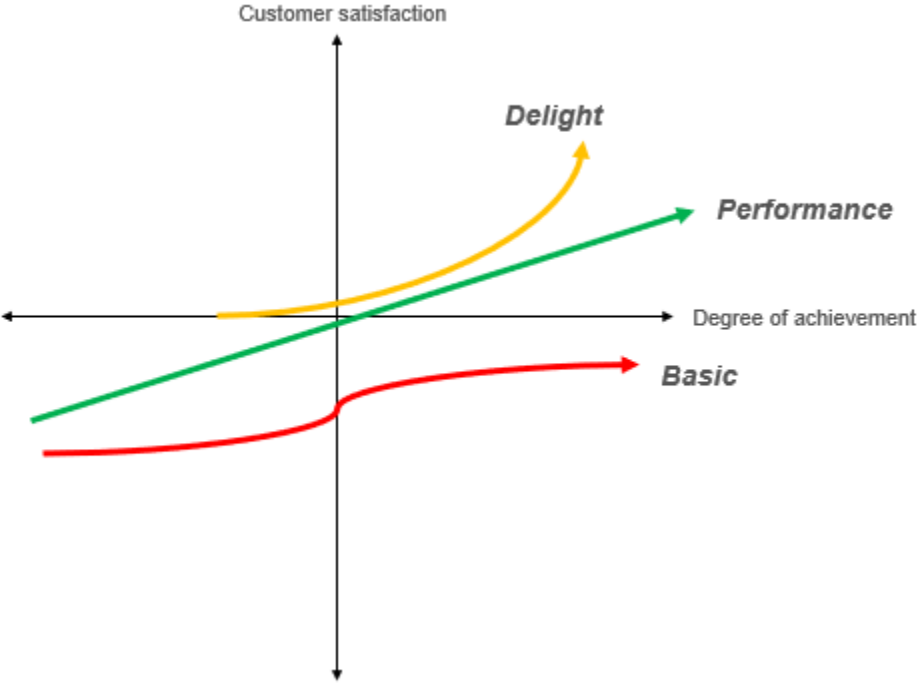


Table 3.*User needs and quality characteristics, categorized via Kano model*

User Need	Need Category (Kano Model)	Quality Characteristic
Student feels comfortable attending school	Basic	Strong school rating
Student feels comfortable with mental health professionals (i.e., school psychologist) available in school	Basic	Strong teacher/provider rating
An after-school mental health education program is provided at low or no cost to families	Performance	Cost is subsidized
There is minimal to no stigma for adolescents accessing after-school mental health education program	Performance	Staff training in place to ensure minimal to no stigma in promoting/helping students access and/or facilitating the program
Mental health issues that cannot be addressed via wellness best practices in the after-school program are effectively escalated (i.e., emergency care or to students' families to seek external medical care)	Performance	Process in place for escalations where needed
Take home materials or resources are available as part of after-school program	Delighter	Process to have materials printed/emailed to students' parents or guardians on a regular cadence (i.e., 2x/month)
Families are informed on how their student(s) is doing in the after-school program	Delighter	Communication process that provides progress updates on regular cadence (i.e., 2x/month)

APPENDIX E: MANDEEP SEKHON INDIVIDUAL DELIVERABLES

Appendix E.1: Individual Social Determinant of Health Analysis

Social Determinant of Health Analysis – Individual Assignment

Introduction

Social determinants of health (SDOH) are factors that can influence health at an individual and/or community level. Specifically, SDOH are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Socioeconomic factors such as education, employment status, family/social support, income, and community safety as well as the physical or built environment account for between 30-55% of health outcomes (Going Beyond Clinical Walls: Solving Complex Problems, n.d.) (see Appendix E.1a).

Social determinants of health can be categorized into 5 domains (Healthy People 2030 | Health.gov, 2024) (see Appendix E.1a). Education Access and Quality is an important SDOH that can significantly impact an individual's health and wellbeing throughout their life and can be considered an upstream determinant of health. Basic education, including fundamental learning, reasoning, emotional intelligence and interacting with others are important aspects of health (Hanh et al., 2019). A solid foundation in these areas can lay the groundwork for a healthier outcome in a population. Education is a way to break the cycle of poverty and promote health equity (Cohen et al., 2013). One factor that contributes to education access and quality is an individual's mental health status. The presence of anxiety and/or depression can contribute to poor educational, social and health outcomes (Lawrence et al., 2015). According to the Healthy North Carolina 2030 report produced by the North Carolina Institute of Medicine, North Carolina ranks 32nd in the U.S. for the number of children with two or more adverse childhood experiences (ACEs) (Donohoe, 2021). Access to mental health services and resources in underserved areas is of particular concern and the COVID-19 pandemic has led to poorer mental health outcomes for adolescents (Gotlib et al., 2023). The recent announcement of \$188 million in funding by the U.S. federal government through the Bipartisan Safer Communities Act for additional training and

hiring of mental health professionals in schools sends a clear message about the important connection between education and mental health (U.S. Department of Education Announces More Than \$188 Million From The Bipartisan Safer Communities Act to Support Mental Health And Student Wellness | U.S. Department of Education, n.d.-b).

Short term impacts of adverse mental health on education can lead to increased absenteeism, declined academic performance, and social and psychological disruptions (*How Mental Health Disorders Affect Youth* | *Youth.gov*, n.d.). Long term impacts of poor mental health can include increased rates of suspension and expulsion, substance abuse, and poor health outcomes (Schlack et al.,2021). We will focus on how middle schools in Burke County, NC can provide mental health support and care to its students to positively impact upstream determinants of Education Access and Quality and improve health outcomes for the next generation of Burke County citizens (see Appendix E.1a).

Geographic and historical context

Burke County is in the western part of North Carolina with a population of approximately 90,000 people (United States Census Bureau QuickFacts, n.d.) and is comprised of seven incorporated municipalities. Burke county has the highest proportion of state employees outside of Raleigh, NC (the state capital). Burke county is known for its parks and natural resources which contributes to a healthy tourism industry (*Burke County* | *NCPEDIA*, n.d.). Burke county has 26 schools and 11,632 students (*Burke County Schools*, n.d.-b). There are 15 preschools, 15 elementary schools, 7 middle schools and 7 high schools (*Burke County Schools*, n.d.-b). 39.7% of students are economically disadvantaged and are eligible to participate in the federal free and reduced-price meal program (*Burke County Schools*, n.d.-b).

Priority population

The priority population that has been identified to focus on is children ages 11-13 in public middle schools in Burke County, NC from families with a low socioeconomic status. According to the 2022 Burke Community Health Assessment (*2022 Burke Community Health Assessment - burkenc.org*), approximately 42% of the population living in Burke County between 2017-2020 has been living under 200% of the federal poverty level. The federal poverty level is the minimum income that a family

requires for food, clothing, transportation, shelter, and other necessities and is used to determine if the income level of an individual or family qualifies them for certain federal benefits and programs (Hayes, 2023).

According to the 2022 National Healthcare Quality and Disparities Report (NHQDR), an increase in the number of adolescents reporting persistent feelings of sadness or hopelessness prompted the Surgeon General to release a 2021 advisory on Protecting Youth Mental Health (*2022 National Healthcare Quality and Disparities Report*, n.d.). Of note are several unsettling and startling statistics from the 2022 NHQDR report: The rate of death from suicide among adolescents ages 12-17 increased by 70.3% between 2008 and 2020, rising from 3.7 to 6.3 deaths per 100,000 population. In 2020, among adolescents ages 12-17 years, non-Hispanic White adolescents (7.4 deaths per 100,000 population) were more likely to die from suicide than Hispanic (5.0 deaths per 100,000 population) or non-Hispanic Black (4.6 deaths per 100,000 population) adolescents. In 2020, only 41.6% of adolescents ages 12-17 with a major depressive episode in the last 12 months reported receiving treatment. Data from 2008 to 2019 suggest the rate of treatment has not substantially changed despite rising incidence of mental illness and suicide (2022 National Healthcare Quality and Disparities Report, n.d.). While the age group 12-17 includes middle and high school, we anticipate that an early intervention in middle school will be of benefit in the long-term given the large number of physical and emotional changes experienced by the onset of adolescence that begins in middle school.

Measures of Social Determinant of Health

We plan to identify schools that serve our priority population by examining the free and reduced lunch rate of middle schools in Burke County. According to the 2023 NC Association of County Commissioners Map Book (*NCACC County Map Book 2023*, n.d.), 20% of children in Burke County live in poverty compared to 18% for the state. Additionally, 5% of households in Burke County are food insecure (*NCACC County Map Book 2023*, n.d.). We recognize the limitations of using this one criterion to assess socioeconomic status and plan to use it as a baseline for identification of a school and subsequent student population.

We propose to use validated tools such as the Patient Health Questionnaire (PHQ-9) for Adolescents and the Beck Depression Inventory (BDI) (Beck et al.,1996) to assess anxiety and/or depression levels. The PHQ-9 and BDI have the highest sensitivity (up to 90%) and specificity (up to 94%) (Forman-Hoffman, et al., 2016). The PHQ-9 is a short nine-question questionnaire that is based off an adult questionnaire and has been modified for adolescents (Johnson et al.,2002). It is a validated tool that can be used to assess depression in school settings (Fonseca-Pedrero et al.,2023). Additionally, the PHQ-9 has been validated as an acceptable tool to use across sociodemographic groups in the U.S. for meaningful assessment of depression and use in community settings such as schools (Patel et al.,2019).

The BDI is a twenty-one-question questionnaire that can be used for the diagnosis of depression (Patra et.al, 2023). The Beck Depression Inventory for Youth (BDI-Y) (Beck et al.,2001) is designed to identify symptoms of depression in adolescents. It is longer in length than the PHQ-9 but can offer a complementary analysis of mental health status in adolescents.

Rationale and Importance

With the introduction of the Bipartisan Safer Communities Act (BSCA) from the U.S. Federal government, funding has been allocated to address mental health challenges in schools. Recently Vice President Kamala Harris announced that North Carolina will receive \$12 million from the federal government to hire 332 mental health counselors in schools statewide (*U.S. Department of Education Announces More Than \$188 Million From The Bipartisan Safer Communities Act to Support Mental Health And Student Wellness | U.S. Department of Education, n.d.*). This funding initiative recognizes mental health as an important component of education, health, and well-being by the federal government and public health practitioners. By identifying adolescents at-risk early and providing services and resources in the school community with assistance of counselors and licensed social workers to improve mental health, we hope to decrease the total number of adolescents experiencing anxiety and/or depression and see an increase in the overall health and wellbeing of adolescents in Burke County, NC. This is an important step to foster and support the growth of the next generation of Burke County citizens.

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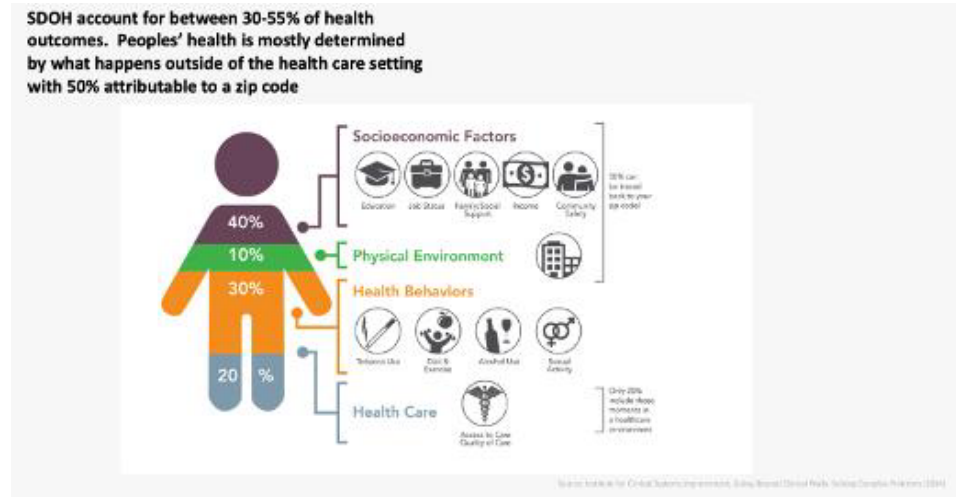
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Appendix E.1a: Figures and Tables

Figure 1.

Social Determinants of Health and Zip Code



Source: *Going beyond clinical walls: solving complex problems*. (n.d.). <https://www.icsi.org/>

Figure 2.

The Five Social Determinants of Health



Source: *Social Determinants of Health - Healthy People 2030* | *Health.gov*. (n.d.). <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>

Figure 3.

Upstream factors of the Social Determinants of Health

Upstream factors:

"What would it take for this problem to never happen again?"

An approach to care that investigates and addresses root causes rather than symptoms can improve long-term outcomes and decrease healthcare costs.



Source: BCCDC Foundation for Public Health

Source: Foundry. (2024, January 29). *Upstream 101: Decoding Public health*. Pacific Public Health Foundation. <https://bccdcfoundation.org/upstream-101-decoding-public-health/>

Appendix E.2: Concentration Deliverable 1 – Leadership Education Access and Quality

Background

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; National Alliance on Mental Illness [NAMI], n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; NAMI, n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases attainment for

higher academic learning that can improve health outcomes and promote a healthy future for Burke County.

Leadership Alignment and Commitment

Multiple stakeholders are involved in improving the mental health of adolescents and education quality in Burke County (see Appendix E.2a). Of these, the High influence/High interest partners are important stakeholders and will form the steering committee for general oversight and decision making of the EmpowerED initiative (see Appendix E.2a)

- Liberty Middle School Counselor(s)/School Psychologist(s)
- Liberty Middle School Principal/Administrative Staff
- Families of LMS Students

A team leadership model within the steering committee will allow various members to demonstrate leadership behaviors and responsibilities as the project evolves and moves through the EmpowerED process flow within LMS. A team leadership model utilizes lateral decision making instead of the traditional top-down vertical decision making that occurs in a hierarchical organization (Northouse, 2022), also known as a heterarchy (Aime et al., 2014; see Appendix E.2a). Heterarchical structures where the expression of power actively shifts among team members to align team member capabilities with changing situational demands has been demonstrated to increase team creativity (Aime et al., 2014). Creativity can enhance the quality of the EmpowerED initiative by fostering new ideas for programming and delivery. The shared team leadership model will encourage all members of the steering committee to participate in leadership as the initiative moves through the different phases (Northouse, 2022).

The Hill Model for Team Leadership (see Appendix Figure 2) developed by Northouse (Northouse, 2022) provides a framework for understanding team leadership, decision-making, action-taking, and team effectiveness. The model also provides tools for leaders to improve team effectiveness by identification of two critical functions – performance and development (Northouse, 2022). Performance can be measured by assessment of the quality of the outcomes utilizing the principles of quality improvement (QI) in public health. Development refers to the team unity and the ability of team

members to work independently to achieve goals and with other team members (Northouse, 2022).

Development can be measured using validated tools such as the Collaborative Team Leader Instrument, a 42-item questionnaire, developed by Larson and LaFasto (LaFasto & Larson, 2001) based their studies of organizational teams. The steering committee may utilize these performance and assessment tools to ensure the highest quality of EmpowerED initiative. Team leadership had been shown to lead to greater effectiveness (Northouse, 2022) and this model is well suited for this type of initiative within a closed system like LMS.

Standards of team effectiveness have been developed to assess a team's health by organizational scholars (Hackman, 1990,2002,2012; Larson and LaFasto, 1989; LaFasto and Larson, 2001). Hackman (2012) suggested six enabling conditions that lead teams to function effectively while Larson and LaFasto (1989) suggested eight characteristics associated with team excellence (see Appendix E.2a). These can be used by team leaders to establish a framework for teamwork and comparison to identify areas for improvement (Northouse, 2022).

In addition to the conditions necessary for team effectiveness, there are certain behavioral norms required for team behavior (Bowring, 2021). The norms for the steering committee to function effectively are trust, respect, commitment, and accountability. Trust is the foundation of all teams and is essential to move together in a collaborative way. Trust can be established through transparent and consistent communication; respect for each person's or organization's contributions to the education and care of the adolescents; commitment to the core mission of the steering committee; and accountability for the work and behaviors.

The Principal of Liberty Middle School and the leadership team (Assistant Principals, etc.) as part of the steering committee for EmpowerED will be an important and vital part of this initiative. According to Joseph Lathan, PhD (Lathan, 2024), an effective leader in education has a distinct set of traits such as:

- Understand the Importance of Building Community
- Empower Teachers and Cultivate Leadership Skills
- Utilize Data and Resources

- Vision and a Plan

The first step of the steering committee is to acknowledge the importance and value of all the stakeholders in achieving the common goal of decreasing the levels of stress and anxiety in the 11–14-year-old student population at LMS. It is important to ensure that their voices are included and heard in the planning by including the adolescents in the design process. All stakeholders should have an opportunity to speak and to think creatively about possible solutions. An effective leader must be able to engage all the stakeholders in a way that creates community and partnerships that are invested in the students' mental health and well-being.

Vision and Goals

The vision of this initiative is ensuring middle school children are healthy and thriving with access to mental health and well-being initiatives. This vision will position Liberty Middle School as a leader in education, adolescent mental health and well-being and create a pathway for other schools in the Burke County school district to follow. We will leverage federal funding from the recently announced Bipartisan Safer Communities Act (U.S. Department of Education Announces More Than \$188 Million From The Bipartisan Safer Communities Act to Support Mental Health And Student Wellness | U.S. Department of Education, n.d.-b) that is intended to address mental health challenges in schools. Additionally, Vice President Kamala Harris recently announced that North Carolina will receive \$12 million from the federal government to hire 332 mental health counselors in schools statewide (Patrick, 2024). This funding initiative recognizes mental health as an important component of education, health, and well-being by the federal government.

As the COVID-19 pandemic has pushed the limits of mental health in our youth, it is critical that we leverage these funding opportunities and advocate for both short- and long-term solutions for the health of our adolescents. Our immediate goals involve making changes to current school staffing, creating a community of mental health advocates within the school and introduction of mental health initiatives. A steering committee that will provide oversight and management of the initiative with input from stakeholders identified in the engagement strategy.

Goal 1: Evaluate the number of school counselors and school psychologists with respect to the needs of the student population. We propose to add access to a part-time licensed clinical social worker (LCSW) to assist with implementation and evaluation of the EmpowerED initiative. The LCSW may eventually work with other schools in the district once EmpowerED is fully established and the pilot is ready for expansion.

Goal 2: Create and implement a mental health wellness program for the student population identified in consultation with the students, counselors, and a mental health practitioner. We will center the students and include them in the co-creation process.

Goal 3: Create a network of support between the students, counselors, psychologists, LCWs, teachers and families to foster community and emphasize the importance of mental health. This network will serve as a hub with eventual partnership with other schools and community organizations such as faith-based organizations and extracurricular clubs. By creating a partnership between adolescents, school counselors, school psychologists, teachers, and parents, we aim to create a space for adolescents to learn and utilize tools that can help them with mental health.

The long-term goal of this initiative is to improve mental health through the use of evidence-based tools that will decrease rates of absenteeism, improve attention and focus in the classroom, and ultimately lead to improved educational experiences and healthier outcomes for the individual and larger community of Burke County.

Member Accountability

Accountability is “the process of setting clear expectations and responsibilities for teams and individuals across the organization” (What Is Accountability in Business? The Only Accountability Guide You Need | ODT by Tability, n.d.). Accountability means holding team members responsible for accomplishing communicated goals, owning the work and being responsible for all outcomes of the work. Team accountability requires clear and transparent communication of goals, roles, tasks, and expectations. These should be defined at the start of the project and space should be provided for discussion and modifications as needed by the collective team. Tools as described earlier for team effectiveness such as

The Hill Model for Team Leadership (see Appendix E.2a) developed by Northouse can be used to ensure accountability. For the LMS mental health initiative to be successful, the various stakeholders will need to participate in the project from beginning to end. To define the various roles of the stakeholders, a “Responsible, Accountable, Supportive, Consulted, and Informed” (RASCI) matrix can be used (see Appendix E.2a). The RASCI matrix “assigns specific roles and responsibilities to each project member directly related to the part of the project they are working on” (Brulotte, 2023).

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Appendix E.2a: Figures and Tables

Figure 1.

Steering Committee Leadership at Liberty Middle School

Steering committee



Figure 2.

Relevant Stakeholders

Stakeholders in Liberty Middle School Mental Health Wellness Initiative
Liberty Middle School (LMS) Counselors and Psychologists
LMS Leadership Team / Administrative Staff
LMS Families / LMS Parent Teacher Association (PTA)
LMS Teachers
Burke County Public Schools Superintendent
Burke County Public Schools - School Board
Burke County Public Schools Student Services Department
Burke Wellness Initiative
Burke County Health Department
Focus Behavioral Health Services, LLC

Figure 3.

The Hill Model for Team Leadership

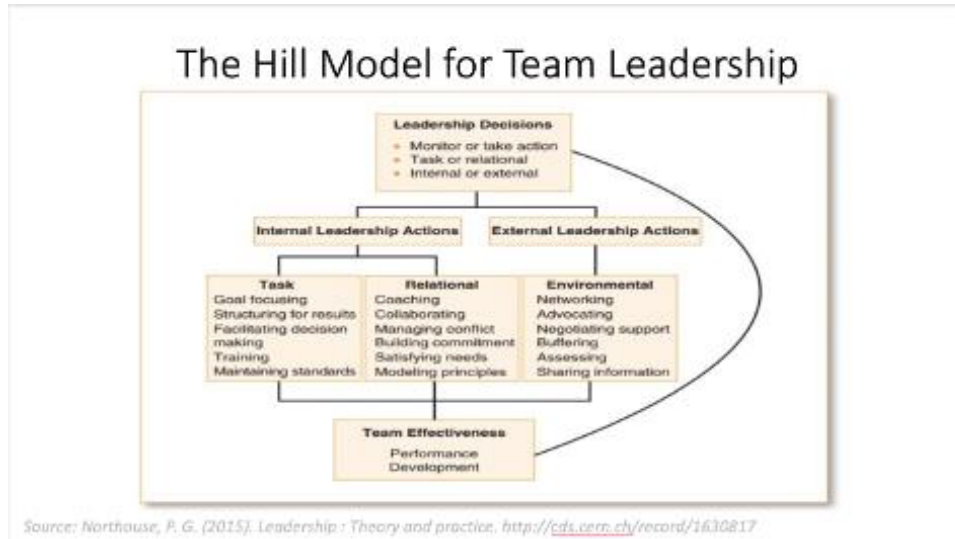


Figure 4.

Hierarchy vs. Heterarchy

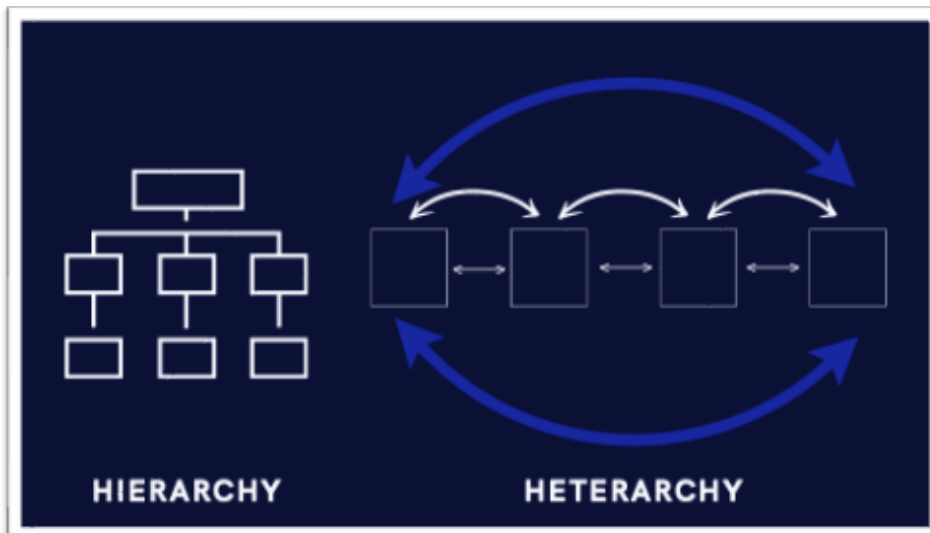


Figure 5.

RASCI (Responsible, Accountable, Supportive, Consulted, Informed) table for EmpowerED initiative

RASCI Levels	Project Goals		
Who is...	Goal 1: Evaluate number of school counselors/psychologists	Goal 2: Create and implement a mental health wellness program	Goal 3: Create a community of support
Responsible	Burke County School Human Resources	School counselors and psychologists, LCSW, yoga teacher, school nurse	LMS principal, LMS leadership team, LMS staff, LMS families, LMS school counselors and psychologists
Accountable	LMS Principal	LMS principal, LMS leadership team	LMS principal
Supportive	LMS leadership team, LMS staff	School counselors and psychologists, LMS Principal, LMS leadership team, LMS staff, LMS students, LMS families	LMS students, LMS families, school counselors and psychologists, LCSW, yoga teacher, school nurse, Focus Behavioral Health Services, LLC
Consulted	Burke County School Human Resources, LMS leadership, existing LMS school counselors and psychologists, Focus Behavioral Health Services, LLC	LMS students, LMS families, school counselors and psychologists, LCSW, yoga teacher, school nurse, Focus Behavioral Health Services, LLC	LMS students, LMS families, school counselors and psychologists, LCSW, yoga teacher, school nurse, Focus Behavioral Health Services, LLC
Informed	Burke County School Board	LMS staff, LMS families, LMS students	Burke County School Board, Burke County Health Department

Appendix E.3: Concentration Deliverable 2 – Quality

Education Access and Quality

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion., n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an “impaired mental health status tends to be associated with poor [grades and test scores]” (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; National Alliance on Mental Illness [NAMI], n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; NAMI, n.d.).

To spark systemic change to improve education quality, our project team’s intervention – *EmpowerED: Adolescent Mental Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases

attainment for higher academic learning that can improve health outcomes and promote a healthy future for Burke County.

Understanding the value of Reaccreditation of Local Health Departments through the lens of CQI [see Appendix C.2]

Mental health was identified as a top priority in Burke County's most recent Community Health Assessment (2022 Burke Community Health Assessment, n.d.) and the observation of children in Burke County Public Schools experience mental health issues was also noted (2022 Burke Community Health Assessment, n.d.). Mental health can be a contributing factor to absenteeism in schools and can result in issues with educational access and quality. Chronic absenteeism rates in Burke County during the 2022-2023 school year were at 21.77% for all students (*North Carolina School Report Cards*, n.d.) with economically disadvantaged students having a rate of 24.83% (*North Carolina School Report Cards*, n.d.). The project team will focus on improvement of mental health of adolescents aged 11-13 at Liberty Middle School (LMS) through the development and implementation of EmpowerED, an Adolescent Mental Health Wellness Program. Through an after-school program focused on mental health awareness and wellness, we aim to decrease rates of absenteeism and improve overall health and wellbeing of at-risk students at LMS. The program has the potential to address the unmet activity 10.2 (*The local health department shall carry out or assist other agencies in the development, implementation, and evaluation of health promotion/disease prevention programs and educational materials targeted to groups identified as at-risk in the community health assessment.*) identified in the county's health department reaccreditation site visit report issued in January 2023 (Burke County Government, n.d.). This unmet activity creates a gap between public health interventions in Burke County that may utilize continuous quality improvement methods and the public health department.

Tools for Improvement and Ideas for Change

There are several tools that can be used to understand processes within a system to identify methods for change and improvement. A flow chart provides documentation of a process and can provide a framework for understanding a process at a high level. It can be used as a communication tool within a

team to identify key steps and to communicate with external teams or partners to understand the context of a process. For quality improvement purposes, a flowchart can be used to refine steps, identify redundancies and weaknesses, and identify responsibilities (Kelly, 2022). The flowchart can be used as discussion for a team to define assumptions, identify any variations in a process and create agreements for operationalization of a process (Kelly, 2022). A process flowchart is a graphical representation of the steps in a process where shapes are used to indicate the type of activity (Kelly, 2022). An oval represents the beginning of a process, a rectangle is an action step, and a diamond is a decision that must be made in the process (Kelly, 2022). In Liberty Middle School (LMS), a process flowchart can be used to define the general steps of EmpowerED program and create consensus within the team for the process (see Appendix E.3a). A second type of flow chart is a horizontal “swim lane” chart (Kelly, 2022) that can be used to define responsibility for process steps as well as handoff points in a process (see Appendix E.3a). The swim lane chart is a useful tool in understanding relationships between departments and within a client or customer facing operation. In the EmpowerED program at LMS, a swim lane chart could be used to visualize handoffs and communications between the data manager, school psychologist, and the wellness instructor and ensure that each department understands their role in the process and is able to define what is needed to complete their responsibility in the process (see Appendix E.3a).

A causal loop diagram is a diagram that visualizes the cause and effect at a system level. It depicts the causes and effects in a system and relationships between the cause and effect on a given system and area of concern (Kelly, 2022). The cause and effect are determined to be reinforcing or negative and indicate that either the cause and effect are additive and reinforcing or that they are diminishing (Kelly, 2022). The causal loop diagram is a method to visualize and discuss a process without the possibility of personalization which can sometimes lead to friction between teams. It is a tool that can be used to set the stage for teamwork and collaboration towards a common goal. At LMS, the causal loop diagram depicts the causes and effects of mental health status and education access and quality (see Appendix F2.a).

Another tool for system visualization is the fishbone diagram which can be used with team to brainstorm causes of a problem (Kelly, 2022). In this drawing, the head represents the problem, and the bones represent possible causes. The causes can be categorized and used to identify areas for improvement. At LMS, the mental health status of the students and the effect on educational access and quality are depicted in a fishbone diagram (see Appendix C.2a).

Design and Implementation of Continuous Quality Improvement

Once EmpowerED is implemented and has established a flow within the school, the team can begin to think about a change concept within the continuous quality improvement framework. One possible change is to change the work environment by focusing on improvement of the mental health of the staff. The team can work with the facilitator to identify ways to broaden the scope of delivery of the EmpowerED program. The improvement model that could be used is the Plan, Do, Study, Act (PDSA) model (*Plan-Do-Study-Act (PDSA) Directions and Examples*, n.d.). This model for improvement is one way to test a change that is implemented (see Appendix E.3a). Surveys can be used to assess the effectiveness of the training and implementation of the tools at periodic intervals. These results can be used to assess if the program is effective and to improve the model and initiate expansion to other schools.

Scaling, Improvement and Recommendations

Upon implementation, the PDSA model can be used as a continuous quality improvement tool at LMS to expand the program and test changes. Some factors to consider as the activity is scaled are to remain steadfast to the overarching goal of improvement of mental health of the students, engagement of students and staff in the improvement process and the accountability of leadership in communication of the goal, setting priorities and mitigating barriers and challenges to the process.

The Burke County Local Health Department has a critical role in ensuring and protecting the health of the citizens of Burke County. One way is to partner in this initiative and simultaneously fulfill one of the objectives and unmet needs of the health department as indicated in the January 2023 Reaccreditation Site Visit Report issued by The North Carolina Local Health Department Accreditation.

The unmet need 10.2 can be met through delivery of mental health education materials to the students participating in the EmpowerED program LMS with a survey designed to assess the effectiveness of the materials and methods of communication. The results of the survey will be used to modify materials as needed to maintain effectiveness within the school communities.

We envision partnering with the local health department to provide accurate, timely and culturally appropriate education materials to the students and to suggest ways to grow and expand the program to additional schools in Burke County. We believe that EmpowerED will be a powerful pathway to improvement of mental health for the adolescents of Burke County, North Carolina.

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Appendix E.3a: Figures and Tables

Figure 1.

Process flowchart of EmpowerED



Figure 2.

Swim lane chart of EmpowerED

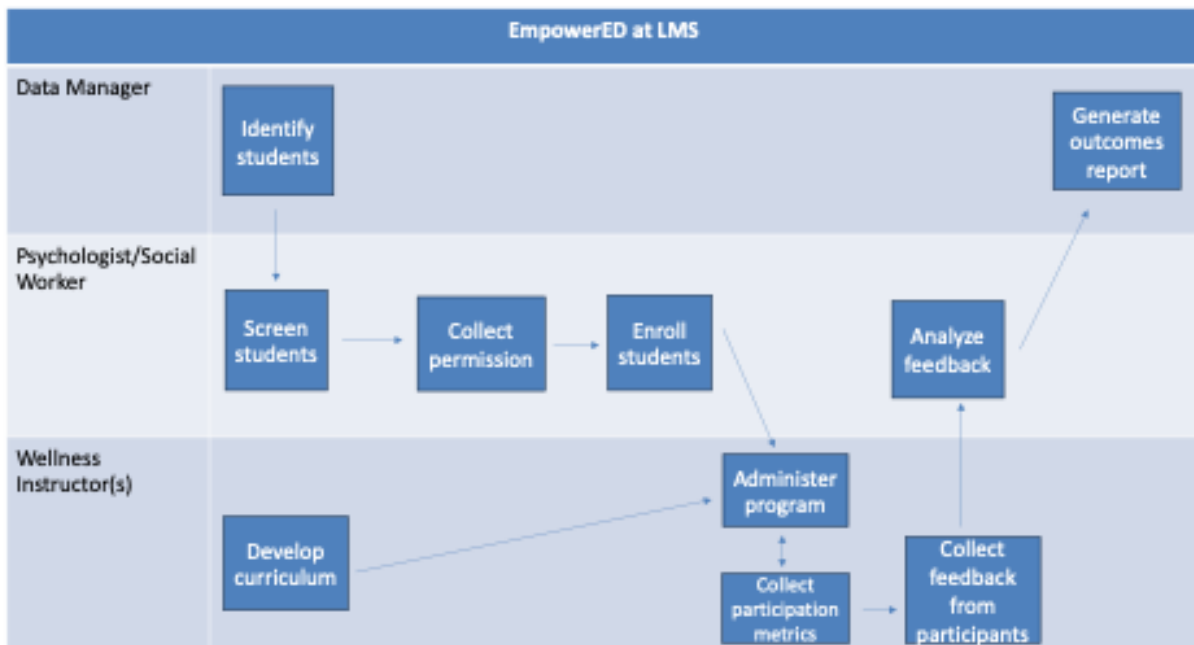
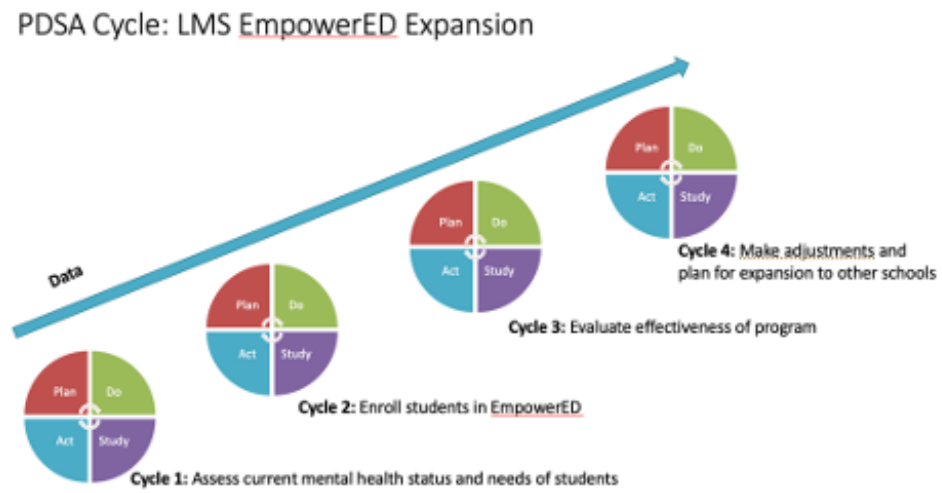


Figure 3.

PDSA (Plan-Do-Study-Act) Cycle



APPENDIX F: OLIVIA SIROONIAN INDIVIDUAL DELIVERABLES

Appendix F.1: Individual Social Determinant of Health Analysis

Introduction to Social Determinant of Health: Education Access and Quality

When striving to ensure good health amongst its citizens, our nation has historically directed resources to clinical health care and traditional systems that address illness once it has already started. Although, the reality is that clinical health care only account for 20% of health outcomes in the United States (County Health Rankings model 2014). Meanwhile, social and economic factors account for 40%; physical environment and health behaviors account for the remaining fraction (County Health Rankings model 2014). Social determinants of health influence money, resources, power, and relationships that shape how a person develops, learns, eats, works, plays, etc. (Center for Disease Control and Prevention, 2019). North Carolina (NC) falls behind in terms of several of these social determinants of health such as education attainment, food security, and income equity with an overall health rank of 32 out of the 50 states (America's Health Ranking 2021 Annual Report & Americans health rankings 2023 annual report). With this considered, focusing on social determinants of health will have greater impact on the community's health. Specifically, by addressing education access and quality, the conditions where children learn, exercise, eat, and socialize can greatly influence the health and wellbeing of this population (Center for Disease Control and Prevention, 2019).

Mental Health and Education

Between 2016-2017, 23.6% of children in NC had Adverse Childhood Experiences (ACEs), a main health indicator. These experiences include economic stress, violence at home, racial discrimination, and more (Healthy North Carolina 2030). Short term impacts of ACEs include poor mental health, which impacts neurobiological development. This in turn affects learning, language, behavior, relationships, etc. (Lipscomb, 2021). There have been hardships over the past few years with the COVID-19 pandemic, school shootings, and other traumatic events that have consequently increased mental distress in schools (Healthy North Carolina 2030). ACEs and mental health issues are associated with truanting, dropping out, and repeating grades (Schulte-Körne, 2016; Lipscomb, 2021). Moreover, absence and low

performance in school, negatively impacts mental health, reinforcing this cycle (Chevalier, 2006; Lawrence, 2019). Mental health influences well-being and development starting at childhood and adolescence, emphasizing the need to focus on mental health and school performance early (Burke County Health Assessment, 2022; DeSocio, 2004). Neglectful response to mental health issues amongst youth exacerbates their disrupted course of education (McLead, 2009). Long term impacts of unaddressed ACEs include higher risk for smoking, drinking, financial hardship, unemployment, violence, unaffectionate relationships, heart disease, stroke, asthma, and chronic obstructive pulmonary disease (Healthy North Carolina 2030; Webster 2022). School is an opportunity for mental health support to mitigate these harms of ACEs and promote wellbeing (McLead, 2009).

Burke County

Burke County, founded in 1777, has a population just shy of 90,000. The county is in the west-central part of NC and known for its agricultural and natural resources (University of North Carolina Press, 2006). Economic hardship is one criterion of ACEs (Healthy North Carolina 2030). Between 2017 and 2020, 42% of Burke County fell under the 200% Federal Poverty Line (FPL) (Burke County Health Assessment, 2022). Children residing in Burke County battle with poverty more severely, with over 30% of children living under the FPL in 2016, compared to the state proportion at 23.9% (Burke County Health Department, 2017). Burke county is home to 11,632 students: 63.8% White, 19.3% Hispanic/ Latino, 6% Asian, 4.3% Black, and 0.2% American Indian/Alaska Native (Burke County Schools, 2024). Almost 40% are eligible for the federal meal program. Out of the 26 schools, there are only 17 full-time counselors. Over 60% of middle school students do not test proficiently for reading and math (Burke County Schools, 2024). In the 2022 county health assessment, 888 of 2,149 individuals reported that mental health (anxiety and depression) was the most concerning issue that affected their family (Burke County Health Assessment, 2022).

Previous efforts to address mental health in this county have failed, making it the number one priority in 2022. One goal in NC for 2030 is that ACEs will be reduced by 5% (Healthy North Carolina 2030). This year (2024) \$300 million will be granted to NC schools to improve mental health access and

quality (Haulenbeek, 2024). This grant addresses the historic lack of attention this issue has received and allows financial opportunity to make change. Community assets in Burke County include educator's commitment to meeting the needs of their students as well as strong parental partnerships (Koon, 2023). The county has been striving to build communication between schools (both inside and outside the district) such that each school builds on the success of the others (Koon, 2023). The Burke County Public Schools Student Services Department have implemented strategies to create "Mindful Rooms" and promote check-ins with students at some middle schools (Koon, 2023). These may be effective interventions; however, it would be beneficial to add a more intensive program while the students don't feel they have to take away from their time in school during the day.

Priority Population and Scope: Middle School students from low socio-economic status

Low socioeconomic status reduces productive resources and can limit nutrition, housing, transportation, and social acceptance (Burke County Health Assessment, 2022). Low-income students are more likely to struggle with math and reading, less likely to graduate or attend university, and twice as likely to miss school (Healthy people 2030; Henderson, 2014). Not only does education drive employment opportunity but it also acts as a foundation to lifestyle. Making day-to-day experiences happier and safer will set the path for lifelong health and well-being (Healthy people 2030). A third of students in Burke County are of low socioeconomic status. Overall, 53% of students in low-income school's struggle with mental health (Wright, 2022). Students in Burke County that are economically disadvantaged achieve proficiency in math and reading significantly lower than economically stable homes; 33% versus 51% proficient in math, respectfully (Koon, 2023) (Table 1). Improving access to mental health resources amongst youth ages 11-13 that qualify for free and reduced lunches through afterschool programs with a counselor can improve their well-being and academic success.

Rationale

School is an opportunity to reduce the effects of ACEs and hardship by promoting mental well-being. Fostering resilience, safe environments, and stable relationships can decrease the impact of childhood traumas and improve long term health (Healthy North Carolina 2023). Children benefit from

systems in school that help build self-regulation skills and promote healthy mental status (Student Mental Health Task Force Report, 2023). This can include after-school programs, with licensed social workers, such as yoga, therapy, and mental health literacy education. Implementing programs that include those strategies to increase mental health literacy, help seeking, and instill lifelong regulatory skills to improve well-being can reduce depression and anxiety in middle school students (Yang, 2019). Increasing the proportion of children who have access to mental health helps, will have better quality educational experiences. Prioritizing this social determinant of health will have a more profound impact on long-term mental health and quality of life than clinical health care (Healthy North Carolina 2030; Healthy People 2030).

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Appendix F.1a: Figures and Tables

Table 1.

Demographic Characteristics in County

Burke County Income	Mental Health Incidence (*Data not directly from Burke County-generalization from literature)	Math Proficiency	Missed class (*Data not directly from Burke county-generalization from literature)
Low Income Students (Economic Hardship) 30% of children below poverty line	53% of students in low-income school's struggle with mental health (Wright, 2022).	33% versus 51% proficient in math low income versus high income	Low income students twice as likely to miss school (Henderson, 2014)

Appendix F.2: Concentration Deliverable 1 – Systems

Introduction

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion, n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that an adolescent with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; National Alliance on Mental Illness [NAMI], n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; NAMI, n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Health Program* – will partner with Liberty Middle School to demonstrate how a pilot after-school mental health program can positively impact the overall educational experience of economically disadvantaged adolescents ages 11-13 years old. This program will focus on and provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate some burdens resulting from ACEs (Sparr et al., n.d.). Access to quality education increases attainment for

higher academic learning that can improve health outcomes and promote a healthy future for Burke County.

Shaping education access and quality amongst middle schoolers in Burke County is specifically complex as there are several contributing factors that play a role. For example, low-income students are more likely to have worse mental health, yet less access to resources in schools. Poor mental health will then impact school experiences, exacerbating a cycle of negative outcomes on future health, resources, and school systems (Wright, 2022). Thus, education access and quality and its impact on health status is a “wicked problem” as “every wicked problem can be considered to be a symptom of another problem” (Rittel and Webber, 1973). Moreover, previous attempts to address this wicked problem proved futile as there are unintended consequences such as social isolation, interruption from daily routine, and overworked staff. Understanding the ramifications of solutions in this system may expose themselves over a long period of time as “there is no immediate and no ultimate test of a solution to a wicked problem” (Rittel and Webber, 1973). In education, every attempt counts significantly with limited resources. Youth social- and neuro-development is labile and impressionable; it is important to not engage these opportunities in a “trial-by-error” manner (Rittel and Webber, 1973).

Map of the system complexity

Mental health influences student’s engagement with education. Low-income students are particularly affected by mental health issues and have access to fewer resources both inside and outside of school (Figure 1). By providing mental health services within the school setting, we are reaching those who may need it the most and will improve their educational experience. Other factors, beyond funding for mental health support, that shape the students experience in the academic space include the faculty, parent, and school district networks (Figure 1). How these entities cooperate to achieve common goals impacts the youth of the community. Recently, schools have taken the brunt of catastrophes such as COVID-19 and mass shootings. Schools should provide programs to help promote emotional regulation, coping, help-seeking, trust building, and self-management.

Moreover, there are complexities associated with processes such as determining what constitutes mental health issues, neurobiological development, affectionate relationships, negative health behaviors, stigma, poor academic performance, and more. Students' future employment opportunities, intimate relationships, neighborhood status, and behaviors are correlated with level of education attained (Healthy North Carolina, 2030; Webster, 2022). Policies such as suspensions and expulsions help identify misbehavior, however, push students away from the mental health and academic tools that can help them. The main concerns within this system are to ensure that there are opportunities within the school system to improve mental health and counter the effects of ACEs and low SES. Challenges associated with generating a useful program to promote education quality include unintended consequences such as stigma, isolation, lack of support, sustainability, or scalability. Assets within this system is federally granted funding, parental partnerships, district collaboration, and educator commitment.

Education and economic/ neighborhood resources

Schools that are in poorer neighborhoods have less school funding for mental health services and resources in a community that already has more prevalent ACEs. With less opportunity to counter negative mental health impact of ACEs, trauma, and economic stress amongst their students, mental health issues persist which decrease school performance. This leads to repeating grades, dropping out, suspensions, truancy, and other academic challenges (**black reinforcing**). With lower education attainment, the cycle of lower employment opportunity and worse long-term physical and mental health continues. Minimal economic opportunity and worse health increase financial hardship and these individuals are likely to live in less desirable locations; more prone to negative experiences and hardships. In these less desirable neighborhoods, and less economic success, the community remains financially stressed, reinforcing this cycle (**green reinforcing**).

Intervention

Mental health issues increase the demand for school counselors and mental health support. With less support staff and resources, the quality of solutions decreases, and non-comprehensive solutions are implemented. For example, students feel these solutions will isolate them from their peers due to stigma

(**yellow reinforcing**). As a result of implementing a non-comprehensive solution, students are not given any of the resources they need to stay healthy, yet the school feels as if they have done their part to solve mental health issues and its impact on education (**yellow balancing**). Schools will then never develop effective solutions to address mental health and students will continue to struggle.

Additional social relationships and societal context that play a role in the system of education include parental and familial support that increase mental health help-seeking (**pink arrows** out-ling extra social contributions to system complexity). With increased stigma surrounding mental health and low SES, students are less likely to engage in help-seeking behaviors and more likely to engage in negative health behaviors because they experience peer pressure. Negative health behaviors result in a plethora of negative outcomes. Aside from exacerbating mental health outcomes, they also decrease academic performance, increase long-term health risks, and pose other lifestyle-related problems. Moreover, poor mental health in youth results in neurobiological development issues leading to worse school performance. Poor school performance results in poorer mental health outcomes, reinforcing this vicious cycle. Negative health behaviors associated with low school performance also contribute to worse long-term health such as heart disease, stroke, asthma, chronic obstructive pulmonary disease, and negative behaviors such as violence and failure to form affectionate relationships (**blue arrows** out-ling other health contributions to system complexity).

System Archetypes

One system archetype outlined in the causal loop diagram is “success to the successful”. Those who live in a high-income and well-resourced neighborhood are more likely to have greater economic opportunity, and better educational experience. With greater educational access and quality, there is better economic opportunity (Figure 2). Another archetype observed in this system is “fixes that backfire” such as adding low-level mental health access, such as mindful rooms, to schools. When these types of interventions are introduced, it takes away from sustainable and effective mental health help. Educators feel as if they have done what they need to do to address mental health, however the solutions are not comprehensive, nor effective. There are negative ramifications such as the students feel isolated or judged

by peers while using the resources and do not want to miss out on their daily routine. Ultimately, students do not engage with the intervention and bad mental health outcomes persist (Figure 3).

Summary, Insights, Strengths, and Weaknesses

In a complex system, such as education in the US, there are often several areas that can be leveraged to see change. One leverage point is within the infrastructure and relationships. There need to be comprehensive programs such as an afterschool program with yoga, therapy, emotional regulation skills development, literacy, etc. that help address mental health issues. This program would be run by a designated counselor or psychologist. Parental partnership with educators is a leverage point so they work together to identify which students are struggling and ensure they get the help they need. Another leverage point involves mindsets and organizing principles. In schools, often the underprivileged kids fall through the cracks. Mitigating stigma, bullying, peer pressure from peers and unreasonably harsh punishment for misbehavior may provide a case for transformation. It will be important to keep kids in school and minimize disruptions for their course of education. Insights from studying the complex system include that there are several avenues in which change can happen, which stresses the importance of a concerted effort on all these fronts. There may need to be more research and leadership planning regarding the specific objectives that define change in the educational system. Defining improvement in education access and quality through mental health access will pave the way forward to ensuring students in Burke County receive the mental health help they need to flourish in the academic setting and in life.

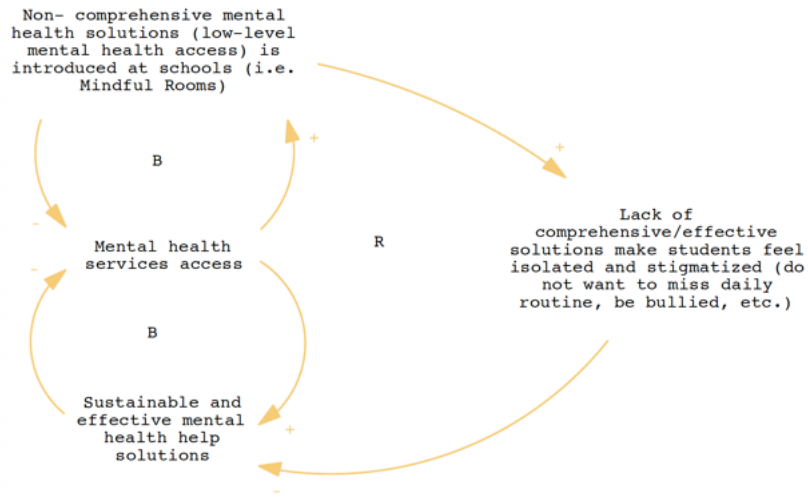
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Figure 3.

System Archetype of Fixes that Backfire



Appendix F.3: Concentration Deliverable 2 – Systems Assessment, Conflict Resolution, and Sustainability

Background

Social determinants of health are environmental conditions where people "live, learn, work, play, worship, and age" that affect their health, well-being, and quality of life (Office of Disease Prevention and Health Promotion., n.d., What are SDOH? section). Rural counties like Burke County are more likely to feel the burden of social determinants of health which affect health outcomes in communities (Parrish, 2010; Social Determinants of Health, 2022). Education Access and Quality, one of five social determinants of health domains, is particularly important since educational opportunities allow children to grow up healthier and live longer (Office of Disease Prevention and Health Promotion, n.d.). There is a strong correlation between mental health and quality education. Reports show that adolescents with an "impaired mental health status tends to be associated with poor [grades and test scores]" (Chu T et al., 2023, Objectives section). Children in families of a lower socioeconomic status are often victims of abuse and neglect – examples of Adverse Childhood Experiences (ACEs). ACEs may lead to different forms of mental health disorders that have a direct negative impact on school performances (Healthy North Carolina 2030, n.d.). These school-related impacts include students missing class, dropping out, and adoption of unhealthy behaviors that disrupt studies (Jakovljevic et al., 2016; *Mental Health in Schools*. (n.d.). Long-term effects of low academic performances can include low educational attainment, unemployment, incarceration, and premature death (Jakovljevic et al., 2016; Vital Signs, 2021; Stewart-Tufescu et al., 2022; *Mental Health in Schools*. (n.d.).

To spark systemic change to improve education quality, our project team's intervention – *EmpowerED: Adolescent Mental Health Program* – will partner with Liberty Middle School (LMS) to demonstrate how a pilot after-school mental health program can positively impact the educational experience of economically disadvantaged adolescents 11-13 years old. The program will provide evidence-based forms of mental health best practices (e.g., yoga, dance, and exercise) to alleviate burdens resulting from ACEs (Sparr et al., n.d.). Access to education increases the likelihood for higher academic learning that can improve health outcomes.

Summary of Leadership Alignment and Commitment [see Appendix E.2]

To mobilize change in LMS, it is essential to engage all stakeholders in an appropriate and effective way. The leadership team, spearheaded by the principal of LMS, will move this project forward by fostering a trusting, safe, and respectful environment. By committing to the core values of continuous communication, empowerment, inclusivity, collaboration, and accountability, the team will achieve the overall mission. The program includes yoga, exercise, mindfulness, and wellness activities to improve mental health. The vision is that improved mental wellbeing will foster a better educational experience such that the students are less likely to miss class, fall behind, or engage in negative behaviors and are more likely to excel academically. LMS will act as a model of leadership and pave the way forward for other schools in the county and beyond. The mission to improve education access and quality in Burke County will be achieved by deploying a program that helps instill emotion regulation skills to improve mental well-being and resilience amongst adolescence. This entails three main goals:

- *Goal 1:* Ensure LMS has the appropriate number of Licensed Clinical Social Workers.
- *Goal 2:* Co-develop a comprehensive mindfulness program with students that includes yoga (breathing and meditation exercises to promote emotion-regulation, mood, and resilience).
- *Goal 3:* Communication pathways will be established between students, counselors/psychologists/social workers, teachers, parents, and administrators to sustain strong genuine partnerships.

Data Measurement

To measure the success and fidelity of the program actions to its intended outcomes, an advocacy and leadership team will be developed to act as a steering committee. This team will include the principal, other administrative staff, and our program team. There will be pre-determined measures of success to help maintain member accountability and continuous quality improvement. These expectations will be developed by the expansive team of community partners. The steering committee will then gather and use this data to check-in with the status of progress of the program and to ensure team satisfaction across stakeholders.

Data that will be collected to measure success and define accountability include changes in coalition resources and member characteristics (see Appendix F.3.a: Goal 1). Before the program starts, the steering committee will communicate with the current social worker on the staff about it. This will provide an opportunity for the team to understand what additional resources the staff needs. There will be quarterly check-ins, to maintain communication with the staff. Another assessment criteria to measure performance is member engagement and satisfaction (see Appendix F.3.a: Goal 2). Starting at the very beginning of the planning stage, each stakeholder will be appropriately engaged (e.g., interviews, questionnaires, focus groups, discussions). Through monthly surveys and these other identified means of engagement, the steering committee will gain insight into team satisfaction. (see Appendix F.3.a: Goal 2). To foster a community of support, the steering committee will use strategies such as CATWOE analysis (Customer, Actor, Transformation, Worldview, Owner, Environment) to understand each partners perspective and evaluate the communication process, group dynamics, and relationship/ network development (see Appendix F.3.a: Goal 3). Mapping strategies, trust building sessions, and online forums will be opportunities for networking in the community.

Conflict Resolution

Although these common goals and objectives will be co-designed by the community partners and system users (e.g. students, teachers, parents, social workers, etc.), there may be conflict throughout the course of change. There will be frequent check-ins with all community members and a forum for partners to express any concerns that crop up over the program. This forum will act as a platform to engage stakeholders to communicate their perspectives and mental structures. When conflict arises, the steering team should engage in inclusive leadership. For example, creating an inclusive organizational environment such that there are multiple feedback avenues (including anonymous) to eliminate bias and welcome different opinions, ideas, values, and identities. In addition, there will be several different reviewers of this feedback. This also allows for decision-making power to be placed in the hands of everyone in the group. Through these inclusive leadership activities, a safer environment for stakeholders to take risks and share their perspective without fear or embarrassment, bias, or rejection will be

established (Northouse, 2021). This type of leadership also prioritizes continuous assessment of the development of the objectives and goals, communication, reachability, and inclusivity amongst members. (Northouse, 2021).

Transformational leadership will be helpful to design a path forward to reach a shared vision, especially when conflict arises. The steering team will need to resolve disputes while inspiring and motivating the community to change towards common goals. If there is detrimental resistance to change, the steering team may need to engage transformational leadership strategies. For example, they may engage in individualized consideration where the steering team carefully listens to individual needs and coaches based on those needs (Northouse, 2021). The steering team can have meetings with these individuals and support this team member to reach their goals that align with the pre-determined team goal. As there were pre-assigned tasks, the coaching, mentoring, and training will be aligned to each group members activities.

Sustaining Momentum

It is within the steering committee's scope to ensure this project's momentum remains strong and in the correct direction. Centering the work and leadership around the group's values such as equity, growth, and communication will play a major role in sustaining momentum in this change process. The steering committee will foster collaborative and long-lasting genuine partnerships through effective communication, inclusion, and confidence building. This team of systems thinkers will be committed to being change agents that aim to help the group reach its goals by acting on the community's assets. By engaging in continuous cultural humility, a self-reflective process to promote mindfulness, self-awareness, and trusting relationships, there will be increased focus on deploying emotionally intelligent and empathetic strategies that ensure each team member feels included and heard (Yeager, 2013). Throughout the duration of the program, the steering committee must strive to stick to the designated goals and live up to their word to build trust and relationships that last.

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Appendix F.3a: Figures and Tables

Table 1.

Goals, Measures & Timeline – Evaluation Goal 1

EVALUATION GOAL 1: Ensure Liberty Middle School has the appropriate number of school counselors, psychologist, or Licensed Clinical Social Workers (LCSW).			
Objective:	Activities:	Study design/data collection method:	Timing:
<p>Prior to the start of the program, there will be an assigned Licensed Social Worker, Counselor, or Psychologist to carry out main program activities.</p>	<p>Communicate with current social worker on the staff so that he/she understands new role</p> <p>Quarterly check-ins: twice a semester</p> <p>Incentives for engagement</p> <p>Add part-time assistants if necessary</p>	<p>There will be a change in coalition resources such that there are new full-time or part-time social workers to run the program.</p> <p>Money utilized from federal grant to compensate staff.</p> <p>Membership characteristic: administrative steering committee will engage in leadership activities and then provide addition training and aid to social working/psychologist team</p>	<p>Before the start of the program. There will also be quarterly check-ins.</p>

Table 2.

Goals, Measures & Timeline – Evaluation Goal 2

EVALUATION GOAL 2: Create and implement an effective mental health wellness program			
Objective:	Activities:	Study design/data collection method:	Timing:
Engage stakeholders appropriately and effectively starting in the planning phase of the program development, all the way through the implementation and evaluation phases.	Community engagement strategies: such as direct meetings/ interviews, questionnaires, and group conferences/ discussions/ focus groups Listening sessions Plan-Do-Study-Act	To understand member engagement and satisfaction we will utilize weekly surveys Progress planning and implementation: program activities and objectives will be pre-determined and evaluated through mixed methods of questionnaires to address qualitative individual satisfaction, in conjunction with quantitative data (e.g. number of students engaging with program, readings proficiency, math scores, days missed, drop-out rates, etc.)	Monthly surveys Data collection at baseline, 6 months, 1 year, and 2 years

Table 3.

Goals, Measures & Timeline – Evaluation Goal 3

EVALUATION GOAL 3: Create a community of support			
Objective:	Activities:	Study design/data collection method:	Timing:
Develop communication pathways between students, counselors/psychologists/social workers, teachers, parents, and administrators	<p>Weekly emails go out to update each stakeholder</p> <p>Group forums to act as a channel for communication of ideas</p> <p>Bi-weekly meetings</p> <p>CATWOEs (customer, actors, transformation, worldviews, owners, and environment) to understand the different community partners</p> <p>Engage in a co-design process using guiding principles such as mutual learning and fosters partnerships</p> <p>Gain perspective by learning about user stories, brainstorming how to effectively communicate best with each group member</p> <p>Assets mapping, stakeholder mapping</p>	<p>Coalition facilitation and communication process: ensure the engagement is clear and outlined so that everyone can understand it. Create avenues that allow for constant and effective communication.</p> <p>Group dynamics and leadership: trust and respect are paramount to community engagement. Surveys will be utilized to measure satisfaction with communication, leadership, inclusivity, etc.</p> <p>Relationship development and network structure: through participative leadership, the leadership team will ensure partners are involved in the decision making process.</p>	<p>Weekly emails</p> <p>Bi-weekly meetings</p>