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# Kinder Ready: Exploring the Role of Technology in Promoting School Readiness Among Low-Income Parents in a Clinic-Based Setting

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Kinder Ready: Exploring the Role of Technology in Promoting School Readiness Among Low-  
Income Parents in a Clinic-Based Setting

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**Abstract**

The Stanford Pediatric Advocacy Program advocates to improve the health status of children in Silicon Valley and the surrounding community. This summer, I worked on a project called Kinder Ready, with the goal of evaluating the feasibility of technology use in promoting school readiness in children ages zero to five. We used a variety of qualitative research methods, including focus groups, one-on-one interviews, and surveys to collect feedback from the community on what their children need to transition into schools. Our local participatory research approach has paved the way for many new partnerships with local organizations, while strengthening existing ones. I will detail my fieldwork experience with the Stanford Pediatric Advocacy Program, specific to exploring the role of technology in promoting school readiness among low-income parents in a clinic-based setting.

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**Introduction**

In the United States, the average cognitive scores of our nation's most affluent children are 60% higher than those of our poorest children before they enter kindergarten according to an article by Sarah Daily in *Early Childhood Highlights* (p. 1). Although some Pediatricians already use clinic-based programs to promote school readiness like Talk Read Sing or Ten Books at Home, the number of children coming from low socioeconomic families who currently show poor school readiness is alarmingly high. There are numerous definitions for what "school readiness" is so the best way to define school readiness is to explain what is expected by school start. According to Bright Futures, a national health promotion and prevention initiative led by the American Academy of Pediatrics, these characteristics are expected by school start:

- Language and speech for communication and learning
- Cognitive abilities to learn letters, sounds, numbers
- Ability to separate from family and caregivers
- Self-regulation of behavior, emotions, attention, and motor movement
- Ability to make friends and get along with peers
- Ability to participate in group activities
- Ability to follow rules and directions

If nothing is done about this matter, and the poor school readiness trend continues, the achievement gap between the wealthy and poor will continue growing and result in many other consequences. This paper will elaborate on my research this summer with the Stanford Pediatric Advocacy Program, specifically on how technology can help promote school readiness among low income parents in a clinic based setting.

## **Background**

### *Literature*

The consequences of a child not being school ready are detrimental in many ways. The National Center of Education Statistics is a part of the United States Department of Education's Institute of Education Sciences that collects, analyzes, and publishes data on education and public school district finance information. From a survey on school readiness, parents who reported they do not intend to enroll their child in Kindergarten are coming from families with low education attainment, from families where mothers are working thirty five hours or more a week, from families who report being "poor", and from families where parents do not speak English (p.5). Reaching proficiency by the third grade is the most important predictor of high school graduation and career success according to "Literacy Promotion: An Essential Component of Primary Care Pediatric Practice". With this said, two thirds of children in the United States and 80% of children living below the poverty level fail to develop reading proficiency by the end of third grade (p.5). In an article by Dr. Dreyer in the Academic Pediatrics Journal, he explains how "the negative consequences of poverty on child health and well-being are often lifelong, leading to worse health, lower developmental and educational outcomes, increased criminal behavior as adolescents and adults, and ultimately intergenerational cycles of poverty" (p.1). This puts children from low-income families at a higher risk for poor school readiness and perpetuates the cycle of poverty. Equity in access to early education is the route out of poverty.

Pediatricians are the only individuals who have universal access to children ages zero to five who may not be enrolled in preschool or have access to. This gives pediatricians the unique ability to create change at an early age. On Bright Futures' website, it elaborates on the role of pediatricians stating that "health care professionals have a unique opportunity to recognize problems and, when possible, to intervene early with effective referral for both specific services and general evaluation so as to enhance the child's readiness for learning by the start of school. Intervention services for eligible children can begin at birth". Although a pediatrician's role is limited due to time restraint and their ability to see a limited amount of families and children per day, the pediatrician's role as an advocate is growing and many clinic-based programs are appearing to help promote child readiness. For example, Reach Out and Read (ROR) is a non-profit organization where pediatricians promote parents to read aloud to their children during well-child check ups. In an article found in the American Academy of Pediatrics, it states that children are more likely to have significantly improved language development by the age of twenty four months compared with their peers who did not participate in these programs and parents participating in ROR reported a more positive attitude toward books and reading. In addition, when parents were asked to name favorite activities with their child or their child's favorite activities, parents were significantly more likely to mention looking at books and reading aloud than were parents in control groups who had not received the ROR intervention (Childhood Coe p.406).

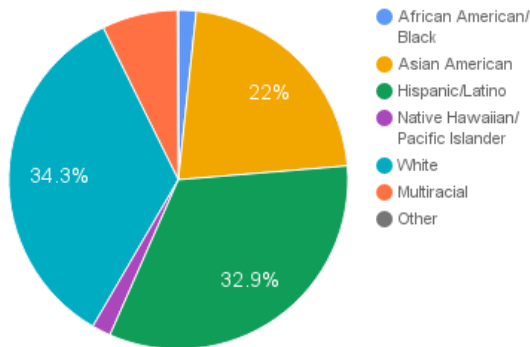
### *Agency Overview*

The Stanford Pediatric Advocacy Program is a multidisciplinary team of medical students, medical residents, community leaders, and public health professionals who address the

community needs through education, service, research, and advocacy. The program is part of the School of Medicine and is relatively small with four individuals who have different backgrounds from medicine or public health. Other members are pediatricians at community clinics and community leaders who help support the community based research. Some overarching public health problems the organization confronts is how poverty affects the community, how the summer slide results in hungry children, and how access to resources is impacting families and children. The mission of the Stanford Pediatric Advocacy Program is to advocate for improving the health status of children while reducing health disparities in the Silicon Valley and its surrounding community.

The target population is children from low socioeconomic families. It is difficult to ensure we are reaching the children and families that need the most support since our target population is filled with diverse cultures. According to the California Department of Finance, the pie chart shows the child population in San Mateo County. The largest segment of the child population is 32.9% Hispanic/Latino, 34.3% White, and 22% Asian American. According to the

San Mateo County Child Population, by Race/Ethnicity in 2015



United States Census Bureau, in San Mateo County, out of the 33.6% of households with children, 9.7% of children ages zero to seventeen are living in poverty. But the most striking fact is that 20.3% are Hispanic/Latino children

Data Source: [As cited on kidsdata.org](#), California Dept. of Finance, Race/Ethnic Population with Age and Sex Detail, 1990-1999, 2000-2010, 2010-2060 (Jun. 2015); U.S. Census Bureau, Current Population Estimates, Vintage 2014 (Jun. 2015).

compared to 3.5%, which are White children. This means that out of 15,743 children who are in poverty, 3,196 children are Hispanic/Latino compared to 551 children who are White (U.S. Census Bureau). On the other hand, the statistic of African American children is not available due to low census. But 33% of the African American adults in San Mateo County are living 200% below the Federal Poverty Level compared to 9.7% of White families according to Menlo Park Surgical Hospital's Community Assessment of San Mateo County (2013 Community Health Needs Assessment Summary). Our families from low socioeconomic status in San Mateo County are typically Hispanic, African American, and Asian.

## **Project Plan**

### *Overview*

Stanford Pediatric Advocacy Program currently has several ongoing projects. This summer, I was able to partake in a few different programs like the Summer Lunch Program at Libraries, a Diaper Distribution Pilot, and Kinder Ready. The one project I focused on is Kinder Ready, which is the focus of this paper. Kinder Ready is composed of four different phases:

- **Phase 1: Summer 2015** - Exploring parent attitudes towards early education and the pediatrician's role
- **Phase 2: Summer 2016** - Exploring technology use among caregivers and exploring attitudes of stakeholders toward clinic-based texting interventions.
- **Phase 3: Summer 2017** - Pilot test of a texting intervention
- **Phase 4: ???** - Randomized controlled trial of the intervention

The project is currently in Phase 2 of Kinder Ready. The first part of the project was the exploratory phase in which parental perspectives and attitudes regarding childhood education were investigated. The research contributed to this larger project by capturing the voice of



parents from the community, and determining whether parents would be receptive to having pediatricians be involved in promoting school readiness from their offices. After the results showed parents valuing school readiness and wanting their pediatricians to be more involved, we started exploring avenues for feasibility, including access to technology, modalities of technology utilization and barriers to technology access in low-income caregivers in addition to collecting feedback on potential uses of technology from the pediatrician's office. Below are the three aims of Phase 2:

- *Aim 1* - Examine current access and use of technology amongst low-income parents and caregivers in San Mateo and Santa Clara Counties: African American, Latino, and Vietnamese
- *Aim 2* - Examine barriers to the use of technology in low-income caregivers in San Mateo and Santa Clara County
- *Aim 3* - Collect feedback on a prototype texting intervention, including strengths and areas for improvement

### *Methodology*

When working with the community, qualitative research allows a more culturally humble research approach. In order to understand the reasoning behind the numbers, it is critical to understand the community and parent perspectives to see the barriers to school readiness. Is it because they simply have no time from working several jobs? Is it because they don't know the importance of school readiness? Or is it because other family members are the primary caregivers of their children? A qualitative approach allows us to hear the voices of the community and bring them to light. Dr. Hanson explains in "Qualitative Research Methods for Medical Educators", how qualitative research findings may stand alone, or generate hypotheses

for a quantitative inquiry (p.2). Quantitative methods are often used after qualitative research is completed.

Within qualitative research, there are different approaches like interviews, focus groups, written narratives, responses to written open-ended questions, observations, and a review of documents. The methods we used for our research were surveys, focus groups, and one-on-one interviews. Focus groups are a great tool for collecting qualitative data in community based participatory research because it makes use of the dynamics of a group, allows people to feel comfortable expressing opinions, and allows a facilitator to see how many participants may agree or disagree about a particular topic.

Table 1

*Methodology Overview*

Parents in the community	Stakeholders
<p>Eight focus groups and Surveys</p> <ul style="list-style-type: none"> <li>● Two to three Latino focus groups</li> <li>● Two African American focus groups</li> <li>● Two Vietnamese focus groups</li> <li>● Two Pacific Islander focus groups</li> </ul> <p>Parent/Caregiver participants with a child currently under the age of five.</p> <ul style="list-style-type: none"> <li>● Excludes any participant under the age of eighteen.</li> </ul> <p>Recruitment (n=29*, number will change since phase 2 is still ongoing)</p> <ul style="list-style-type: none"> <li>● English (all sites), Spanish, and Vietnamese</li> </ul> <p>Incentives</p> <ul style="list-style-type: none"> <li>● Target gift cards, lunch/dinner, child care</li> </ul>	<p>One on one interviews</p> <ul style="list-style-type: none"> <li>● Adult participants who currently work at Ravenswood</li> </ul> <p>Recruitment (n=8)</p> <ul style="list-style-type: none"> <li>● English</li> <li>● Throughout phase 2 (Summer 2016)</li> </ul> <p>Focus Groups</p> <ul style="list-style-type: none"> <li>● Adult participants who currently work at Ravenswood</li> </ul> <p>Transcript-based coding and theme analysis will be conducted.</p>

We had parent focus groups organized by ethnicities to see unique perspectives on school readiness, to avoid any language barriers, and to increase the level of comfort among participants. Our parent focus groups ranged from three to twelve individuals and we plan to host

KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

10

several parent focus groups to capture an accurate representation of the community. Childcare was provided at all focus groups so parents were not distracted. Before the parent focus groups began, they completed a survey and answered questions about their demographics, their day to day use with technology, the types of technological gadgets they own, and their opinions on a school readiness initiative with their pediatrician. Our focus groups were recorded and a note taker also made observations about nonverbal communication, gestures and behavioral responses, which cannot be captured in a recording.

*Preliminary Findings*

Since phase 2 is still ongoing, only preliminary results are available until data collecting officially ends. Surveys are still undergoing analysis but a trend noticed so far is the utilization of technology by parents. We already conducted five parent focus groups with a few left on our calendar this month and the last half of our stakeholder interviews left. Here are some current preliminary themes from the data:

Table 2

*Preliminary Themes*

Parent focus groups	Stakeholder interviews
<p><b>Theme 1: Parents cite thoughts on technology (specifically cell phones)</b></p> <ul style="list-style-type: none"> <li>• “Technology is not a luxury, it is a necessity”</li> </ul>	<p><b>Theme 1: Stakeholders cite concern on logistics of texting intervention</b></p>
<p><b>Theme 2: Parents report that personalization of text messaging is important for engagement</b></p>	<p><b>Theme 2: Stakeholders report limitations of pediatricians</b></p>

## KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

11

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|---|--|
| <ul style="list-style-type: none"><li>● “.....but in the end, not all children are the same”</li><li>● “it’s kind of like, getting spam mail”</li><li>● “I couldn’t respond back to these text messages and get someone else’s opinion, so it wouldn’t really matter”</li></ul> | <ul style="list-style-type: none"><li>● “As a medical provider, our scope is pretty limited and we can’t save people how we want to. We can’t give them a job, we can’t educate them, we don’t have that capacity. I think recognizing that because I think when you go into healthcare you have that idea that you do want to be the savior of people. I think now we’re realizing that now we’re part of a larger community with lots of resources out there already probably addressing a lot of the things we’re trying to do”</li></ul> |
|---|--|

From the parents’ perspective, they reported the difference between a phone versus a computer in technology use. A phone is a necessity, so once he or she receives a phone, he or she has to learn how to use it to communicate with family and friends. A computer on the other hand, is not always necessary or attainable. In addition, parents wanted personalization of text messaging and something potentially with a bilateral ability so they are not receiving messages, which may be regarded as “spam” if it is not personalized. Parents also noted that the generalized text messages might not all apply to the same kid if they are different ages or on a different developmental milestone.

From the stakeholders’ perspective, they reported logistics of a texting intervention being a concern. Who would be the contact person for the texting intervention? Is the intervention going to be bidirectional - and if so who is going to be responding back? Is there a third party vendor they could do this through? Those were a few of the questions brought up by the stakeholders throughout the multiple interviews. Stakeholders also brought up the limitations of pediatricians in school readiness. Many factors contribute to school readiness and pediatricians can only do so much in a clinical setting besides connecting families to resources, advocating,

## KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

12

and reminding parents about school readiness. Pediatricians cannot directly impact a family's financial status for example.

### **Public Health Significance**

Traditionally, qualitative research is regarded with skepticism by the medical community, accused of its subjective nature and the absence of facts according to "Qualitative research: standards, challenges, and guidelines". An example of this claim is Hamberg and colleagues, stating that the established criteria for scientific rigor in quantitative research cannot be applied to qualitative studies (Malterud p.1). This project I worked on throughout the summer has taught me many lessons about research. The qualitative approach utilized was fitting for the research and involving the community to work with us as collaborators was a reason why it was successful.

Community-based participatory research highlights the voices of community members and their status with social determinants of health. This is important in public health since a good understanding of the root issue allows public health professionals to implement programs the community will be receptive to. We incorporated community members and leaders to work with us as equals with our research and also volunteered at their community events. The community partners provided unique insights since they already developed trust within the community that researchers from the outside cannot do in a short time frame. Community engagement is a big part of our project and we would not have been as successful without the help of community leaders and organizations.

### **Competencies**

## KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

13

Throughout the 315 hours of fieldwork, the learning objectives allowed me to achieve the University of San Francisco's Master of Public Health competencies. In addition, my fieldwork also provided many opportunities to deepen my Public Health Core Knowledge areas and the cross-cutting/interdisciplinary values.

This summer, I used ethical, moral, and legal principles I learned throughout the program to guide me in the qualitative research methods. This is especially important because of the community we worked with. In addition, evidence-based principles were critical in the process of developing, budgeting, managing, and evaluating throughout the summer. We looked at different survey design models and many versions of our guides for the one-on-one interviews before using them. Being in a small multidisciplinary team allowed me to develop public health strategies like identifying and prioritizing the key dimension of a public health problem by critically assessing public health literature for the diverse community we work with. In the team, we collaborated with each other to ensure everything was prepped and ready to go prior to interviews and focus groups.

In the core knowledge areas, I brushed up on skills particularly in social and behavioral sciences and leadership through the qualitative research methods I utilized. The logistics of planning out focus groups and recruiting parents in our target population was difficult since half of the work was out of our control. The community partnerships tremendously helped with recruitment for our parent focus groups.

Some cross-cutting and interdisciplinary values I developed further this summer were communications and informatics, culture and diversity, leadership, professionalism, and program planning. Without strong communication among members of our team, among the community

leaders, and among the participants, the focus groups and interviews could have easily fallen apart. We were working with multiple organizations so good leadership was critical in making sure there was communication across all parties. Our qualitative approach allowed a more humble approach to working with multiple cultures and diverse groups.

### **Conclusion**

The National Education Goals Panel adopted as its first goal that “by the year 2000, all children will enter school ready to learn”. It is now 2015 and the achievement gap is still present. We as public health professionals need to promote school readiness and address the barriers to school readiness so the cycle of poverty can stop. According to the National Conference of State Legislatures, “early education investments are compared to other kinds of state investments, with the conclusion that early education investments yield a return that far exceeds the return on most public projects that are considered economic development”. With this in mind, our current government invests less than 5% of total public spending on education during the pre-primary years (p.1). The National Conference of State Legislatures wrote about how model programs like Perry Preschool is “yielding more than \$8 for every \$1 invested” in early education. School readiness is vital and pediatricians need to advocate for children who show poor school readiness. As technology advances, it opens up many creative and unique opportunities for pediatricians to become more involved in promoting school readiness to the children they care for and their families. Equity in access to quality early education is the only route out of poverty.

KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

15

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KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

16

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**Appendix**

**Student:** Brenda Lu

**Agency and Department/Division/Program:** Stanford University, Pediatric Advocacy Program

**Preceptor:** Monica De La Cruz, Program Manager

**Dates of Placement:** May 14, 2016–August 11, 2016

<b>Goal 1: Increase knowledge of qualitative study methods</b>				
<b>Objective 1: Learn and implement qualitative study data collection tools</b>				
<b>Activities</b>	<b>Timeline</b>	<b>Anticipated Hours</b>	<b>Person(s) responsible</b>	<b>Deliverables</b>
Read relevant literature on survey development	May 14–Aug 11	20	Brenda	List of literature read
Read relevant literature on focus groups	May 14–Aug 11	20	Brenda	List of literature read
Assist in developing survey questions	May 14–Aug 11	4	Brenda	Survey
Assist in conducting focus groups	July 13–Aug 4	36	Brenda	
<b>Objective 2: Understand qualitative study analysis</b>				
Read relevant literature on transcribing techniques	May 14–Aug 11	20	Brenda	List of literature read
Perform data compilation and analysis of survey results	July 6–13	40	Brenda	Spreadsheet of compiled data
Transcribe interview/focus group data	July 13–Aug 11	40	Brenda	Transcriptions of interview/focus group data

KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

17

Code interview/focus group data	July 13–Aug 11	40	Brenda	Spreadsheet of coding of interview/focus group data
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Total Anticipated Hours for this Goal: 220

<b>Goal 2: Understand the background of child readiness, technology utilization, and barriers to technology access in low-income families of East Palo Alto</b>				
<b>Objective 1: Conduct a literature search on libraries roles in food insecurity</b>				
<b>Activities</b>	<b>Timeline</b>	<b>Anticipated Hours</b>	<b>Person(s) responsible</b>	<b>Deliverables</b>
Complete literature search on child readiness, technology utilization and barriers to technology access in low-income families	May 14–June 30	40	Brenda	List of literature found and summaries of pertinent articles
<b>Objective 2: Learn key demographic data on areas to be studied</b>				
<b>Activities</b>	<b>Timeline</b>	<b>Anticipated Hours</b>	<b>Person(s) responsible</b>	<b>Deliverables</b>
Research key demographic data relating to child readiness	May 14–Aug 11	8	Brenda	Spreadsheet of pertinent demographic data

Total Anticipated Hours for this Goal: 48

<b>Goal 3: Understand the role of community partnerships and key stakeholders</b>				
<b>Objective 1: Actively communicate with community partners</b>				
<b>Activities</b>	<b>Timeline</b>	<b>Anticipated Hours</b>	<b>Person(s) responsible</b>	<b>Deliverables</b>
Communicate with community centers and food sponsor representatives via email.	May 14–Aug 11	10	Brenda, Monica, and community partners	Notes from email communication



KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

19

**Master of Public Health Program  
MPH PROGRAM COMPETENCY INVENTORY – Attachment 2**

<b>USF MPH Competencies</b>	<b>Proposed Activities</b>	<b>Number of Hours (Estimated )</b>
1. Assess, monitor, and review the health status of populations and their related determinants of health and illness.	Surveyed community	2
2. Demonstrate the ability to utilize the proper statistical and epidemiologic tools to assess community needs and program outcomes.	Surveyed community One on one interviews Focus Groups	40
3. Identify and prioritize the key dimensions of a public health problem by critically assessing public health literature utilizing both quantitative and qualitative sources.	Literature Review	30
4. Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety.	Surveyed community One on one interviews Focus Groups	40
5. Apply theoretical constructs of social change, health behavior and social justice in planning community interventions.	Provided a prototype and asked community for feedback.	10
6. Articulate the relationship between health care delivery and financing, public health systems,	Literature Review on existing community and policies of target	30

KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

20

and public policy.	population.	
7. Apply evidence-based principles to the process of program planning, development, budgeting, management, and evaluation in public health organizations and initiatives.	Literature Review of qualitative methods. Multiple focus groups for saturation of data.	40
8. Demonstrate leadership abilities as collaborators and coordinators of evidence based public health projects.	Worked in a multidisciplinary team researching and collecting data.	30
9. Identify and apply ethical, moral, and legal principles in all aspects of public health practice.	Focus groups participants in an unidentified manner.	10
10. Develop public health programs and strategies responsive to the diverse cultural values and traditions of the communities being served.	Will develop a pilot program after data is analyzed.	--

11. Effectively communicate public health messages to a variety of audiences from professionals to the general public.	Publishing results and revising the paper to make sure there it is understandable by general public.	--
12. Advance the mission and core values of the University of San Francisco.	Advocating for low-income families and children facing disparities.	40
<b>CEPH Core Knowledge Areas</b>	<b>Proposed Activities</b>	<b>Number of Hours (Estimated )</b>
<b>Biostatistics</b>	Used in analyzing data	5
<b>Epidemiology</b>	From literature review of the community. From community leaders input	40
<b>Social and Behavioral Sciences</b>	Surveyed community One on one interviews	40

KINDER READY: EXPLORING THE ROLE OF TECHNOLOGY IN PROMOTING SCHOOL READINESS AMONG LOW-INCOME PARENTS IN A CLINIC-BASED SETTING

21

	Focus Groups	
<b>Environmental Health</b>	Literature review	30
<b>Public Health Administration and Leadership</b>	Interview with stakeholders Focus group with stakeholders	10
<b>Cross-Cutting/Interdisciplinary Values</b>	<b>Proposed Activities</b>	<b>Number of Hours (Estimated)</b>
<b>Communication and Informatics</b>	Surveyed community One on one interviews Focus Groups Technology Utilization Weekly staff meetings	40
<b>Diversity and Culture</b>	Qualitative research method for a more culturally humble approach. Focus groups split by ethnicity.	30
<b>Leadership</b>	Working in a multidisciplinary team.	30
<b>Professionalism</b>	Working in a multidisciplinary Weekly staff meetings	40
<b>Program Planning</b>	Planning logistics of focus groups and one on one interviews	5
<b>Public Health Biology</b>	-----	
<b>Systems Thinking</b>	-----	