

## Rural Libraries for Digital Inclusion of Farming Communities

### 1. Project Justification

#### a. Introduction

This \$149,635 one-year planning grant, which aligns with the Laura Bush 21<sup>st</sup> (LB21) Century Librarian Program's Goal 2 and Objective 2.1, addresses information and communication technology (ICT) challenges in rural communities by partnering the School of Information Sciences at the University of Tennessee at Knoxville (UTK) with the University of Tennessee Institute of Agriculture (UTIA), rural public libraries in Tennessee, and statewide 4-H network agents. The partners will (1) collect and analyze ICT needs of farming communities, (2) gather and assess the willingness, capabilities, needs, and challenges of rural public libraries to meet the ICT needs of farming communities in Tennessee, (3) identify challenges and solutions for rural public libraries to collaborate with the 4-H network to better serve farming communities, and (4) identify interdisciplinary courses, guest speakers, and practicum opportunities as part of building a certificate program on "Digital Inclusion of Farming Communities" for public librarians.

We select LB21's Goal 2 and Objective 2.1 because the technological needs of agricultural communities in rural areas are closely intertwined with concerns of diversity, equity, and inclusion. Lack of access, or insufficient access, to the Internet coupled with lack of skills with using digital technology leave rural and/or underrepresented populations vulnerable to unemployment and social isolation and curtails their ability to find information to make decisions about their health and well-being. Libraries, as anchors of their local communities, need to be acutely aware of the specific digital needs and challenges faced by those in the agricultural communities, especially during these times of rapid technological and cultural change. We plan to investigate (a) ICT challenges experienced by farmworkers in rural America, which include (i) accessing broadband (defined as 25 Mbps download/ 3 Mbps upload (FCC, 2018)), (ii) using computers and mobile devices (i.e., digital literacy), and (iii) accessing and using the information on the Internet and social media for self-sufficiency, participation, and collaboration; and (b) ways in which small, rural public libraries can help farmworkers, most of whom are born outside of the US, overcome their ICT challenges.

#### b. Current Challenges

This investigation of the ICT needs and challenges of farming communities is particularly timely due to current events within the past several years, most notably the COVID-19 pandemic. The pandemic has deepened the already significant digital divide that exists between rural America and more populated areas, particularly in the areas of unemployment and a decreased ability for digitally isolated populations to maintain control over their physical health through social distancing measures. These contemporary challenges are discussed in more detail below.

- i. **Growing unemployment rate in rural America:** As of 2020, 14% of the US population, i.e., 46 million people, lived in rural areas (Dobis et al., 2021). Agriculture is the most dominant source of employment and income for people living in rural counties that are not adjacent to metro areas (Ajilore & Willingham, 2019; US Department of Commerce, 2019). Agriculture and its related industries provide 10.3 percent of U.S. employment (US Department of Agriculture, 2020). Nearly a decade of uninterrupted decline in rural unemployment rates occurred before the COVID-19 pandemic, reaching a low of 3.5 percent in September 2019. In April 2020, unemployment rates reached 13.6%, unprecedented levels since the Great Depression in the 1930s, in rural areas (Dobis et al., 2021).

- ii. **No or slow Internet → High exposure to the COVID-19 virus:** As of February 2022, 99.99% of the population in the US has potential access to at least one broadband provider (FCC, 2022), but low-income levels, unaffordability, old age, and digital illiteracy severely inhibit their access to broadband (NTIA, 2016). Traditionally, public libraries serve as the only source of broadband for many rural communities (Real et al., 2014). During the COVID-19 pandemic, face-to-face activities at school, work, and shopping stores migrated online. As a result, almost 15% of Americans with no or slow access to the Internet at home, most of whom also live in poverty, faced increased challenges to complete work and school assignments, especially when schools and public libraries were closed (Dobis, Krumeel & Sanders, 2022). These residents may not have been able to reduce the risk of contracting COVID-19 through services such as online shopping and telehealth. Higher cumulative rates of COVID-19 cases were observed in rural communities (Dobis, Krumeel & Sanders, 2022). Poor rural counties in the South, including Tennessee, the focus of this one-year planning grant, have low Internet availability. This rural digital divide may have made the households less resilient and not as well equipped for the increase of the everyday online climate seen during the pandemic (US Department of Agriculture, 2022).

### **c. Digital Inclusion: Challenges and Opportunities**

Digital inclusion can help people address their health issues through the information, support, and expert consultation and guidance available online, especially during and after the COVID-19 era, and can also create more economic opportunities and growth for rural America. Digital inclusion refers to the set of policies and activities necessary to provide all individuals and communities access to ICTs and equip them to use these ICTs (National Digital Inclusion Alliance, 2022). The five activities that can lead to the digital inclusion of millions of rural Americans are as follows: (1) affordable, robust broadband Internet service; (2) Internet-enabled devices that meet the needs of the user; (3) access to digital literacy training; (4) quality technical support; and (5) applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration (National Digital Inclusion Alliance, 2022). Socioeconomic status, education, geography, age, ability, language, and among other factors can create barriers to implementing these activities for the digital inclusion of rural communities (Real et al., 2014). For instance, Hispanic farmworkers in rural America, who do not understand English, might not benefit from digital literacy training in English.

Governments, businesses, and non-profits have undertaken several initiatives to provide broadband Internet access in rural areas. Federally, the recently signed \$1.2 Trillion Infrastructure Investment and Jobs Act (H.R. 3684) allocated \$65 billion to close the digital divide through programs including the \$42.45 billion Broadband Equity, Access & Deployment Program, \$1 billion “Middle Mile” Broadband Infrastructure Program, \$2 billion Tribal Broadband Connectivity Program, and \$2.75 billion Digital Equity Act Program. Additionally, the infrastructure bill added \$2 billion to the US Department of Agriculture’s ReConnect program, which is an established program targeting less-populated regions of the United States with the slowest Internet (Lee, 2021). At the state level, many states have made committed efforts to addressing digital inclusion, such as Tennessee, North Carolina, and New York (Associated Press, 2021; Moore, 2021; Tennessee Department of Economic & Community Development, 2022). Organizations and non-profits, such as the Department of Agriculture, National Science Foundation, the Bill & Melinda Gates Foundation, and Appalachian Regional Commission offer grants and funding for research projects, local development projects, and more (Bill & Melinda Gates Foundation, 2022; National Telecommunications and Information Administration, 2021).

However, there are very few funds directed specifically at increasing the availability of ICT devices to meet the needs of farming communities, enhance their digital literacy, or provide them quality technical support. The US Department of Agriculture recently has made substantial efforts to provide more funding, such as the \$18.6

million allotted to the US Department of Agriculture 2501 program, \$4.7 million to Farm Service Agency programs, and \$1.73 million to nine Agricultural Marketing Service projects (US Department of Agriculture, 2021b). Furthermore, in 2021, the US Department of Agriculture announced the Climate-Smart Agriculture and Forestry Partnership Initiative which will help U.S. farmers, ranchers, and forest landowners address climate change (US Department of Agriculture, 2021a). While these programs are steps in the right direction, there are historically many challenges to receiving funding (Blackwater, 2020; Bode, 2022; Brodtkin, 2020; Chao & Park, 2020; Das & Gabbard, 2021; De Wit & Read, 2021).

#### **d. The Significance of Public Libraries for Digital Inclusion**

For several decades, public libraries have been the “heart of community’s social vitality” (Matarasso, 1998) and serve as anchors of communities in rural America (Institute of Museum and Library Services, 2016). Anchors in society are the actors that play a significant role in the development and improvement of the quality of life and well-being of communities (Clopton & Finch, 2011). Their mission is to meet community members' needs by delivering public services (Billis, 2010). Public libraries provide a platform and resources needed to fulfill the information needs of vulnerable populations (Moxley & Abbas, 2016). Rural public libraries in Southern and Central Appalachia, for example, (a) provide access to broadband through hotspots and computers, (b) lend laptops, Chromebooks, and mobile devices to patrons, (c) offer technology training programs, STEM (i.e., Science, Technology, Engineering, and Mathematics) materials for kids, GIS mapping story walk program, FaceTime alternative storytime, and online workshops for job seekers, and (d) provide makerspace with gadgets (Mehra et al., 2019). Digital literacy programs in public libraries better equip rural Americans to exploit the economic opportunities created by access to high-speed Internet. The Institute for Museum and Library Services works with the US Department of Labor so that public libraries can serve as one-stop partners for job-seekers (American Library Association, 2014). For instance, helping rural Americans prepare resumes on computers, search for jobs online, apply for jobs online, and file taxes online are some of the most common services offered by public libraries, which contribute to growing the rural economy (Bertot et al., 2016).

However, due to low financial and human resources, public libraries struggle with meeting changing ICT needs of farming communities (Singh et al., 2021). The technology proficiency of public librarians is one of the major barriers for small and rural libraries to offer technical support (ASU, 2022). Rural libraries cannot reach their full customer service potential because of lower staffing (Real et al., 2014). Historically, rural libraries across the US receive less federal funding and support compared to their urban counterparts (American Library Association, 2012). Since most public libraries are funded by tax dollars, politicians’ and legislators’ perceptions of public libraries influence the amount and types of funding the library receives (Jaeger et al. 2013; Stenström, 2012). For instance, representative Paul Ryan's 2015 budget resolution recommended that the federal government not have a role in public libraries and that Congress "shift the federal agency's responsibilities to the private sector.” (American Library Association, 2014). As part of the American Recovery and Reinvestment Act of 2009, the federal government supports rural libraries for digital inclusion through competitive grants (e.g., Broadband Technology Opportunity Program), and loans (e.g., Broadband Infrastructure Projects), but most of the small and rural public libraries are understaffed and/or have under-skilled librarians, which deteriorates their ability to write competitive grant proposals or submit loan applications (Real et al., 2014). Historically, most Americans do not support the government’s investment in broadband (Pew Research Center, 2010), which further constrains the government’s ability to fund libraries for digital inclusion.

#### **e. Background of the Project Team’s Work in This Area**

Farming communities are key to influencing the socioeconomic landscape of rural America (USDA, 2021c), but our preliminary survey of rural public librarians in Tennessee shows that most of the rural public

libraries do not have any specific programming initiatives to serve the ICT needs of farming communities. Sample agricultural services offered by rural libraries in the Southern and Central Appalachian region include: convening farmers' markets, running seed libraries, providing space for community gardens, assisting patrons in learning about the catfish production, and integrating vegetable education into storytelling programs (Singh et al., 2021). Our survey of rural public librarians in Tennessee suggests that the possibility of reaching a patron base like farmworkers, who might not be aware of all the library's services, can motivate librarians to pursue the proposed certificate program housed in UTK's School of Information Sciences, the only ALA-accredited school in the state. As of February 2022, none of the library and information science (LIS) graduate programs in the US offer certificates on this topic.

Dr. Devendra Potnis, Principal Investigator (PI), has published research on types of innovations in public libraries (Potnis et al., 2020), managing innovations in public libraries (Potnis et al., 2021), and challenges and solutions for planning and implementing social innovations in public libraries in the US (Winberry & Potnis, 2021). This research identifies gaps in the innovative services offered by public libraries and guides them to efficiently and effectively plan and implement innovations for better serving local communities. Singh et al. (2021) recommend rural public libraries pool resources by collaborating with local non-profits to understand and meet the needs of farming communities. Several rural libraries in the Southern and Central Appalachia collaborate with retirement homes, Appalachian Sustainable Community Development, Blue Ridge Women in Agriculture, and local schools, colleges, universities, and businesses (Mehra et al., 2019), but perceive the initiatives by Agriculture centers for local farming communities as "competition" (Singh et al., 2021). Public libraries' funding and resource structures are inherently stacked against other government-funded rural institutions (Real et al., 2014), which partly explains this rivalry among government institutes in rural America.

According to the Institute of Museum and Library Services' database of past awards, since 2005, LB21 has funded over 3 million dollars to 11 projects related to broadband, but none of the grant awards directly met the ICT needs of farmworkers in the US. We fill in this gap.

Our team of researchers with expertise in ICTs, digital literacy, information access and use, agriculture, and rural America will work with community leaders, including extension specialists and 4-H agents, to help public libraries involve rural youth (i.e., people in the age group of 15 to 24) to meet the ICT needs of local farming communities. This partnership will allow the team to leverage the popularity and pre-established network of 4-H, rural America's largest youth development organization that empowers nearly six million young adults with the skills to lead for a lifetime. Our preliminary survey with 4-H agents in Tennessee found that 15 of them are already working with an equal number of rural public libraries for attracting and training youth with information literacy and technology skills, but an in-depth investigation is required to (a) understand the gaps and solutions for equipping the 4-H youth to help farming communities with their technology needs, and (b) design, establish and promote a programming initiative in public libraries where public librarians would work with the 4-H youth for meeting the ICT needs of local farming communities. In line with these existing services mentioned above, public libraries can demonstrate the value of broadband to the local farming communities through innovative, ICT-enabled services and programming. Rural America, especially farming communities, can realize, experience, and benefit from broadband's potential of democratizing socioeconomic opportunities.

Farming communities is an umbrella term used for indicating a range of actors like farm owners, supervisors, partners, and farmworkers in the agriculture and related industries (USDA, 2019a), but **this planning grant will focus on the farmworkers** (i.e., farm laborers, sorters, packers, equipment operators, greenhouse workers, and hand-packagers) **and youths in farming communities** for the following reasons. Most of the funding and initiatives aiming for the digital inclusion of rural America cater to the needs of farm owners and their partners. Since 2000, the need and employment of farmworkers is on a steady rise around the US (USDA, 2019a). In the

backdrop of growing unemployment in rural America, more jobs are needed to retain the youth and workforce in rural America, which would also meet the need to serve the aging population in rural America and build and maintain rural infrastructures such as roads, schools, and hospitals. Youth's participation in STEM initiatives like the ones envisioned by our grant can increase the probability of their entry into postsecondary STEM majors and vast STEM-related occupations. Digital literacy is critical for the workforce to maintain their standard of living in the US (Real et al., 2014). The collaboration between the 4-H network and public libraries can be a win-win solution for small, rural libraries and their local communities, including farming communities.

## 2. Project Work Plan

### a. Overview

The work for this planning project will take place in four main phases: 1) Analysis of ICT needs in rural Tennessee farming communities; 2) Surveys and interviews of librarians and administrators; 3) Assessment of existing collaborations between 4-H and rural public libraries; and 4) The design of a certificate program on digital inclusion of farming communities for public librarians (see Figure 1). These phases are described in more detail below.

**Phase 1:** In the first two months, we will collect and analyze the ICT needs of farming communities in rural Tennessee. We will adopt a mixed-methods approach. For instance, using the convenient sampling technique, we will conduct interviews and focus groups with 4-H agents and young adults in their programs to understand the needs and attitudes of farmworkers. We will ask the agents and their youth participants to identify farmworkers whom we can interview to discover their ICT needs and attitudes toward rural libraries. Using the snowball sampling technique, we also plan to ask 4-H agents to recommend community leaders in farming communities with whom we will conduct phone interviews to learn more about their and farm workers' needs.

**Phase 2:** In 3-6 months of this planning grant, we will survey and interview librarians and administrators of rural public libraries in Tennessee to understand their willingness, capabilities, needs, and challenges to meeting the ICT needs of farming communities. We will design an online survey to reach out to the alumni of the School of Information Sciences at UTK, who work or have ever worked in rural public libraries in Tennessee. Several of our alumni are administrators and leaders of public libraries. We will interview them and some of their staff to understand their experiences and challenges to serving farmworkers, in detail. This phase will help us understand how embedded rural public libraries are in farming communities.

**Phase 3:** In 7-9 months of this planning grant, we will identify and assess the existing collaborations between 4-H and rural public libraries. Our preliminary survey with 4-H agents in Tennessee found that 15 of them already work with an equal number of rural public libraries. We will interview these 4-H agents and their partners, i.e., rural public librarians to understand ways to harness this relationship by identifying the challenges and solutions for rural public libraries to collaborate with the 4-H agents and the youth trained by them. This phase will also explore and assess the possibility of involving the youth trained by 4-H agents for helping public librarians meet the ICT needs of farming communities.

**Phase 4:** The findings of the first three phases will help us design a certificate program, "Digital Inclusion of Farming Communities," for public librarians. In 10-12 months, we will identify interdisciplinary courses, practicum opportunities, and guest speakers for the proposed certificate program. A selection of the UTIA courses implements the "train the trainer model" where 4-H agents are trained to interact with farmers and youths. Our proposed certificate program can benefit from this approach wherein public librarians who take some of these courses can benefit from understanding the needs of and best practices for reaching out to and interacting with farming communities. To be inclusive, our proposed certificate program would be open to all

public librarians, without requiring them to join any of the graduate programs at UTK or UTIA. Hence, for this certificate program, we will need to identify only those graduate courses that would be open to both degree-seeking and non-degree-seeking public librarians. Due to the new budget model at UTK, administrators in different academic units might have varying levels of flexibility for allowing non-degree-seeking public librarians to take graduate courses in their units. We will discuss various possibilities and negotiate with these administrators. We will offer them options such as a cap (e.g., 8 public librarians a year) for the number of non-degree-seeking public librarians allowed to take the graduate courses identified for our certificate program.

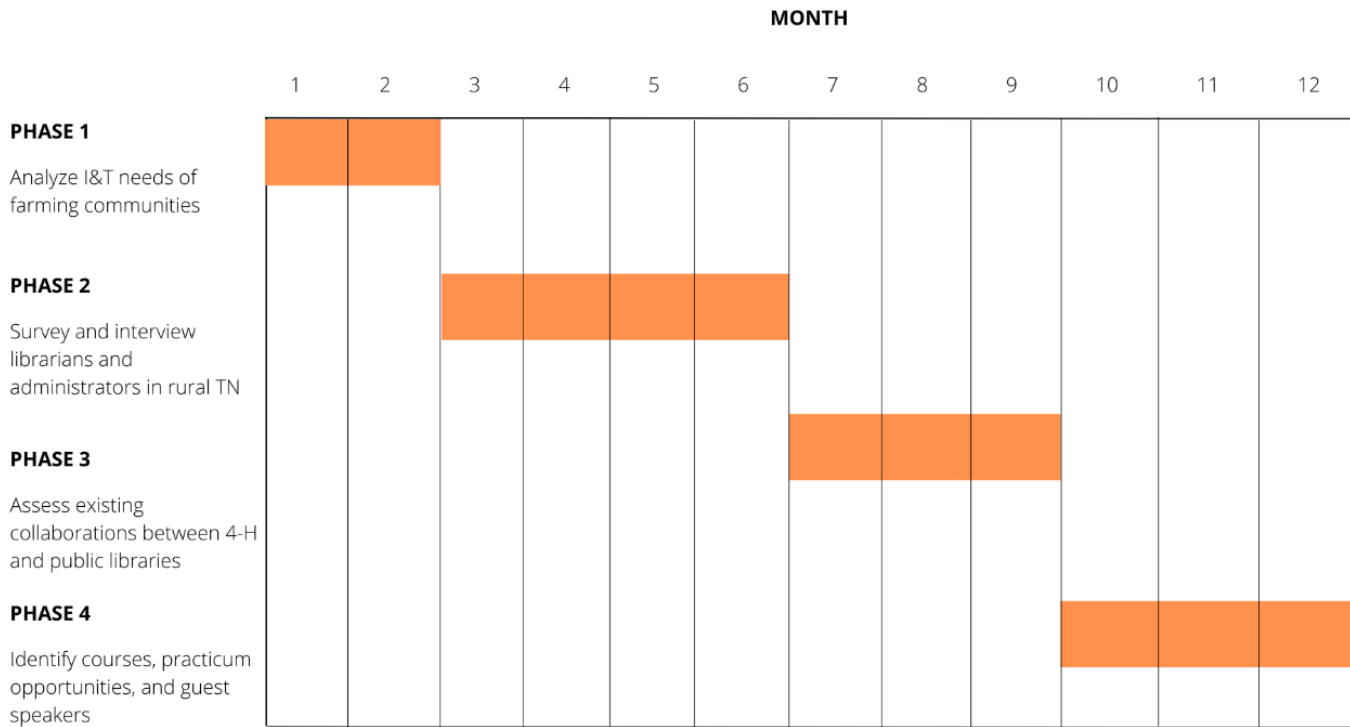


Figure 1. Project Work Plan

**b. Evaluation/ Performance Measurement Plan**

The evaluation measures of this project will consist of a mix of formative and summative evaluation techniques. The team will meet at the beginning of the project to review the overall structure of the project, outline strategies for ensuring maximum impact for each phase and review the Schedule of Completion to review and fine-tune details for meeting the project goals.

After each phase of the project, the team will meet to assess the extent to which the project remains cost-effective and adheres to the Schedule of Completion and make any necessary adjustments to ensure efficiency and effectiveness of project activities. Also after each phase, the PI will compare the target number of participants for the interviews, focus groups, and surveys with the goals for each category and assess if any shifts are needed in recruitment approaches. The collaboration with UTIA, whose expertise in agriculture and rural America and existing connections with 4-H agents and representatives will make the process of reaching out to the target population of farm owners and farmworkers time and cost-efficient.

At the end of the project, the team will gather opinions about the newly proposed “Digital Inclusion of Farming Communities” certificate program from librarians, administrators of public libraries, farmworkers, 4-H agents,

and farmworkers. We will also collect their suggestions for what skills and knowledge should be covered in this certificate program. This feedback and suggestions will be incorporated into the design of the certificate program.

### **c. Dissemination of Results**

We will disseminate results of all phases of our planning grant by making presentations at library conferences (e.g., Association for Library and Information Science Education Conference, Association of Small and Rural Libraries Conference) and agriculture and 4-H conferences (e.g., Southern Association of Agricultural Scientists, National Agricultural Communications Symposium, American Association of Agricultural Educators, Association for Communication Excellence, National Association of Extension 4-H Youth Development Professionals Conference, Joint Council of Extension Professionals Conference, Biennial 4-H Conference of the Southern States). We will also publish findings of Phases 1, 2, and 3 in top-tier journals read by LIS faculty and administrators, and practitioners like public librarians and administrators and 4-H agents and administrators.

We will build a website for sharing all the key details of this planning grant. We will also leverage social media for reaching out to different audiences. Podcasts in farming communities and tapping into local news media (e.g., Heather Duncan, at WUOT, a national public radio member station; Charles Denney, UTIA Marketing and Communications) are a few more options we plan to explore.

### **d. Contingency Planning**

In Phase 1, depending on the COVID-19 pandemic, we will switch from in-person to virtual focus groups with 4-H agents. Given the constraints of rural Internet, we may utilize telephone calls or distribute printed survey material to those who need it.

## **4. Project Personnel**

This project brings together a team of experts in ICTs, digital literacy, information access and use, agriculture, and rural America, as well as 4-H agents and representatives. The specific roles and qualifications of each team member are described below.

**Dr. Devendra Potnis**, Principal Investigator: He has co-authored over 120 peer-reviewed research publications in the ICT for Development area, with a focus on the causes and consequences of accessing and using ICTs and information by (a) individuals such as farmers, people earning less than a dollar a day, (b) communities, including vulnerable populations in rural Appalachia, (c) organizations like academic and public libraries, and (d) government agencies in developing and developed countries. In the past, he had developed an innovative curriculum for library and information science graduate students to serve as mobile technology consultants for nonprofit organizations. He will oversee all phases of this project and will co-execute phases 2 and 4.

**Dr. Daniel Collins**, Co-Principal Investigator. He is an Extension Specialist at UTIA. He is a life-long 4-H member. He has served as a camp staff member, an educational programming assistant, an agent, and a state coordinator for multiple 4-H centers in North Carolina and Virginia. At UTIA, he oversees statewide 4-H camping and STEM programs. He recently completed his Doctor of Education degree in Agricultural and Extension Education with emphasis on Leadership and Adult Learning. Phases 1, 3, and 4 of this project will benefit from his experience and expertise.

**Dr. Jamie Greig**, Co-Principal Investigator: As an assistant professor of agricultural communication, he conducts research on the intersection of internet access and ICT adoption in the agricultural sector and rural

communities. He will co-execute Phases 1 & 3 and will lead the department of agricultural leadership, education, and communication portion of the Phase 4 certificate program development.

**Jamie Harris**, Co-Principal Investigator. She is an Extension Specialist at UTIA. She has over 30 years of experience in 4-H youth development at the county, region, and state levels. With her current role as a state 4-H youth development specialist, leading programs in citizenship, leadership, and teen programs, she will work to implement Phases 1, 3, and 4 of the project.

**Dr. Shelli Rampold**, Co-Principal Investigator. She is an assistant professor in Agricultural Leadership, Education, and Communications and is responsible for the agriculture and natural resources at UTIA. Agricultural communication is her area of expertise, and she holds a large Extension appointment in which she works with Extension agents to mitigate issues facing the agriculture and natural resource sectors. She has extensive experience conducting needs assessments to design evidence-based initiatives. Therefore, she will co-lead Phases 1 and 3 of this project.

### 3. Diversity Plan

The demographics of farmworkers in the United States show a very different face than they did fifty years ago, or even in the previous decade. As of 2019, according to the US Department of Agriculture (USDA, 2019a), 57 percent of farmworkers in the U.S. were of Hispanic and/or Mexican origin, and 56 percent were born outside the country. The number of female farmworkers is rising, climbing to 26 percent from a former 18 percent in 2009, as female workers move into performing more farm labor tasks that were traditionally performed by men. In addition, although the average age of farmworkers is rising in general, young people still made up a significant portion of farmworkers in 2019, with 20 percent being under the age of twenty. This population is largely undereducated: almost 50% of farmworkers lack high school diplomas.

The number of migrant farmworkers in Tennessee has also grown in recent years. Farming dominates the state's landscape, comprising over 41 percent of the state's 26.4 million land acres, and ranks eighth in the nation in the number of farms (USDA, 2019b). Of these farms, 20 percent hire farm labor as of the census of 2017 (US Department of Agriculture, 2017a). As of 2017, the number of migrant workers on Tennessee farms numbered over 5,000 (US Department of Agriculture, 2017b) and that number is projected to keep increasing, particularly with the legalization of hemp farming in the state (Smith, 2019). The vast majority of these workers come from Latin American countries. Over 90 percent of hired farm laborers on tomato farms in East Tennessee, which are supported by a population of several thousand workers during peak season, are from Mexico and Central American countries (Silver et al., 2014). These workers are exposed to a high level and variety of occupational hazards and poor health outcomes as a result of the work they perform, including bodily injuries, sun exposure, pesticides, and increased risk of infection due to close living and working quarters (Silver et al., 2014). In May 2020, a farm in East Tennessee made headlines when every single one of its 187 employees tested positive for COVID-19 (Benton, 2020).

These farmworkers, many of whom speak little or no English, have few resources and support to help them take control of their financial, social, and health outcomes. As of 2021, the average hourly wage of a farmworker in Tennessee was \$12.96 (USDA, 2019). They are unlikely to afford and pay for the business services for addressing ICT challenges. Public libraries can serve as a lucrative resource for them to meet these needs, but cultural barriers may exist to prevent them from seeing libraries as a viable resource. Traditionally, in developing countries, including Mexico, libraries are considered as the place for books and literate people (Potnis & Gala, 2022). Small, rural libraries might be up against this image perceived by less educated farm



workers born outside of the US, who might not think of libraries as a place to seek help for addressing their ICT challenges. Phase 1 of our project will collect data related to the attitudes of farmworkers toward libraries and identify potential solutions for libraries to address this image problem if any.

Our planning grant will create value for different sizes of farming communities, farming communities involved in the production of poultry, beef, catfish, soybean, etc., farming communities in different geographies of Tennessee, and farmworkers with different types and levels of ICT needs.

Public librarians trained using our newly proposed certificate program can bring a new lens to rural libraries for developing and nurturing novel partnerships with local youth, 4-H agents, and farming communities. Most of the farms in Tennessee employ less than 500 employees, and hence, represent small businesses. This project will create an opportunity for rural libraries to offer their spaces, human resources, technology resources, and information resources for creating value for small businesses in rural America. Rural youth's engagement with and training of farming communities to meet their ICT needs can generate employment opportunities for the youth. New connections, diverse perspectives of people from different age groups and races, and new information related to ICT need, resources, and solutions, shared at social events and meetings in rural libraries, can lead to long-lasting, symbiotic relationships among public librarians, 4-H agents, rural youth, and farming communities. Rural libraries can experience an increased footfall and patronage of local young adults and members of farming communities. As a result, these libraries might design and develop new programming initiatives dedicated to serving farming communities.

#### **4. Project Results**

The symbiotic partnership among the rural youth, farming communities, 4-H agents, and rural public libraries can lead to (a) building a community of practice with the help of youths for generating and sharing ICT-related challenges and local solutions for rural communities, (b) helping farmers make decisions by accessing the right information at the right time using technology solutions, (c) better utilization of library resources including space, (d) elevate the perceived value and utility of public libraries for rural America, (e) a template of collaboration between public libraries and 4-H to help farming communities, and (f) help rural libraries better articulate their significance and value for local communities.

Our preliminary survey with public librarians in Tennessee shows that they are expected to attend a certain number of hours of professional development training. The proposed certificate program can inform, train, and equip librarians with the necessary skills and knowledge needed to better serve their communities. The certificate program will equip public librarians in the following professional development areas identified by the Orientation, Training, and Leadership Development Committee of the American Library Association (2021): diversity, equity of access, information literacy and instruction, new members, technical services, technology, user services, and young adult services. Public Library Association's latest publication titled *Strategic Planning for Public Libraries* (Fuller, 2021) lists "reaching non-users" and "engaging with the community" as the key areas of strategic planning the librarians care about the most. Our certificate program will train librarians with the strategies for reaching out to local farm workers and better engaging with local youths and farming communities.

The certificate program will strengthen the partnership between public libraries and the 4-H network to benefit public libraries, local farming communities, the 4-H network, and rural youth. Thus, this planning grant will help us design a certificate program for training public librarians to strengthen rural libraries' engagement with farming communities where youth trained by 4-H agents would help along with public librarians to meet the ICT, especially information and broadband-related needs of farming communities, thereby meeting Goal #2 and objective #2.1 of the Laura Bush 21st Century Librarian Program.

**After the planning grant period**, depending on the results of Phases 1, 2, 3, and 4, we will seek more funding from the Institute of Museum and Library Services to recruit and train rural librarians for our novel certificate program. In the future, we would like to collaborate with the LIS schools in rural America (e.g., School of Library and Information Science at the University of Iowa, School of Library and Information Management at Emporia State University) to scale the impact of our efforts of benefitting rural librarians and their local farming communities around the country. We will undertake a research project to follow up and investigate the results of our planning grant in detail.



## **Rural Libraries for Digital Inclusion of Farming Communities**

### **Digital Products Form**

#### **Type: What digital products will you create?**

Digital content will include course modules created by key project personnel for a future certificate program on digital inclusion of farming communities. These materials will include downloadable Word, PDF and Powerpoint documents containing curriculum materials and educational resources. File formats will include .docx, .pdf, .pptx, and .jpg. The Dublin Core metadata set will be used to describe the material generated during the project. UT's TRACE automatically converts MS Word files to PDF format upon import to the repository. TRACE provides a streaming server to host media files.

#### **Availability: How will you make your digital products openly available (as appropriate)?**

Project personnel will post all curriculum materials on a website created specifically for the project which will reside on one of the UT servers. Project personnel will also publish curriculum materials in UT's TRACE, which organizes, preserves, and provides access to digital content in a variety of formats. The materials posted on the UT website will remain indefinitely, even after the event that the contributor(s) leave the University, and will be modified as new updates occur. TRACE policy states that the authors of the material may request the removal of all or part of the items, but there is no foreseeable reason why this request would be necessary. Authors may also suggest the restriction of access to all or part of the materials; however, it is the intent of project personnel that the materials will remain open indefinitely.

#### **Access: What rights will you assert over your digital products, and what limitations will you place on their use? Will your products implicate privacy concerns or cultural sensitivities, and if so, how will you address them?**

The materials created during this project will be accessible to libraries and educators for free. We will assign "Attribution-NonCommercial CC BY-NC" license issued by Creative Commons. This license lets others remix, tweak, and build upon our work non-commercially, and although their new works must also acknowledge us and funds offered by IMLS to implement the course and be non-commercial, they do not have to license their derivative works on the same terms.

#### **Sustainability: How will you address the sustainability of your digital products?**

The materials developed during this project will be stewarded through long-term engagement as well as continued, open access to resources. The curriculum materials will be available through a dedicated webpage. It as well as publications will be freely accessible through a website created specifically for the project, as well as available indefinitely through UT's TRACE repository. UT's TRACE will preserve the content to assure digital file stability, longevity, and security using digital preservation standards and techniques, and will notify authors of significant preservation actions, such as format migration. TRACE provides a streaming server to host media files. The TRACE repository provides an interface for search and discovery of materials. The PI and other members of the project team will promote these materials to professionals at conferences, workshops, podcasts, local radio channels, and other communication channels.

### **Mission Statement**

As of March 14, 2022, the stated mission of the University of Tennessee-Knoxville (UTK) is: “We are a diverse community with a shared commitment to discovery, creativity, learning, and engagement.” To this end, UT-Knoxville aims to:

- Empower learners of all ages and backgrounds to achieve their dreams through accessible and affordable education and state-of-the-art research training opportunities
- Advance the prosperity, well-being, and vitality of communities across Tennessee and around the world through our research, teaching, service, and engagement
- Commit to excellence, equity, and inclusion within the university, across the state, and in all our global activities

This mission is communicated on the university website in the latest version of the UT-Knoxville Strategic Vision document (<https://www.utk.edu/vision>).

### **Governance Structure**

The University of Tennessee, Knoxville is the flagship campus of the statewide University of Tennessee System, which is governed by a 12-member Board of Trustees appointed by the Governor of Tennessee. The Board of Trustees appoints a president to oversee the operations of the system, four campuses, and two statewide institutes. The president, currently Randy Boyd, is the chief executive officer of the campuses at Knoxville, Chattanooga, Martin, the Health Science Center in Memphis, and the Space Institute at Tullahoma. The president’s responsibilities also include oversight of UT’s statewide institutes of agriculture and public service. All UT vice presidents and chancellors report to the president. Administration of the UT System is overseen by the President’s staff and chief unit officers, which make up the President’s Administrative Council. The Council meets regularly with the President on key System-based projects and priorities. The Knoxville campus has been headed by Chancellor Donde Plowman since 2019. Provost and Senior Vice Chancellor John Zomchick is responsible for the academic administration of the Knoxville campus and is a member of the Chancellor’s Cabinet.

### **Service Area**

As of the 2020 United States Census, the population of Knoxville, TN, was 190,740, making it the largest city in East Tennessee and the state’s third largest city after Nashville and Memphis. Knoxville is situated in the Great Appalachian Valley (known locally as the Tennessee Valley), about halfway between the Great Smoky Mountains to the east and the Cumberland Plateau to the west. The city has a total area of 98.1 square miles. As of the 2020 Census, the median age was 32.7, with 19.1% of the population under the age of 18, and 12.6% over the age of 65. The population was 48% male and 52% female. The population density was 1,815 persons per square mile. The racial and ethnic composition of the city was 76.1% white, 17.1% black, 0.4% Native American, 1.6% Asian, and 0.2% Pacific Islander.<sup>[100]</sup> Hispanic or Latino of any race were 4.6% of the population. People reporting more than one race formed 2.5% of the population. 89.4% of residents age 25 years and older had a high school diploma, while 32.4% had a bachelor’s degree or higher. The median household income for 2015-2019 was \$40, 341.

### **History**

The **University of Tennessee-Knoxville (UTK)** was founded in 1794. It has ten undergraduate colleges and eleven graduate colleges, and hosts more than 30,000 students from all 50 states and more than 100 foreign countries. It is classified among "R1: Doctoral Universities – Very high research activity."

The **School of Information Sciences** at UTK began in 1928 when the UT College of Liberal Arts launched an undergraduate school library media education program. The Department of Library Service was established in 1944 as part of the UT College of Education. In 1971, the Department became the Graduate School of Library and Information Science (GSLIS), and one year later, the program was accredited by the American Library Association. Finally, in 2002, the GSLIS joined the College of Communication and Information as one of four Schools, the School of Information Sciences.