Assessing Information Technology Educational Pathways that Support Deployment and Use of Rural Broadband

Laura I. Spears[1], Marcia Mardis[1], Laura-Edythe Coleman[1], Charles R. McClure[1] and Jisue Lee[1]

[1] Florida State University

Abstract

This action-based National Science Foundation-funded research project is prompted by the growth of broadband in industries in rural communities in which over 40% of households lack broadband capability. Through the multi-method pursuit of five rural community-focused need and barrier-focused research questions, the researchers are investigating the role of Career and Technical Education (CTE) pathways in meeting the needs of rural employers and new technical professionals in rural communities in Northwest Florida. This research will lend important insight into the challenges to, in accordance with the iConference 2014 theme, "breaking down the walls" to sustainable broadband-supported economic development.

Keywords: culture or communication studies, human information behavior, information policy and open access, information services, teaching and learning

Contact: lib03@my.fsu.edu, marcia.mardis@cci.fsu.ed, lsc10@my.fsu.edu, cmcclure@lis.fsu.edu

1   Introduction

The goals of this four-year project are to strengthen the employee pool of IT/broadband staffing (including general IT, broadband and network technicians) and to improve educational support related to broadband, telecommunications, and networks for future and current IT employees in rural Northwest Florida and to understand how to transfer this competency to other similar rural markets.

2   Background

Low broadband adoption rates in rural communities can be attributed in part to decreased availability of broadband service, expense of computers and Internet service, and a perceived lack of need for a household connection [1]. Yet, if rural communities are going to capitalize on the benefits that broadband can bring for economic development, they will need more employees with advanced, diverse technology skills.

According to the U.S. Bureau of Labor Statistics, the computer systems design and related services industry will be in the top five growth industries for 2008-2018, with the strongest growth occurring in network systems and data communications analysis [2]. As government services, health care, business and commerce, and social networks are incorporated into this technological advance through the use of broadband connectivity, rural communities that are not prepared to exploit broadband will be left without technical support for a range of services that further economic development. There is a significant workforce need for information technology (IT) workers with skills and knowledge of broadband technology to support the needs of rural employers and industries, and in turn economic development. This effort mirrors the metaphorical theme of 'breaking down walls' through an understanding of rural cultures that may not embrace or appreciate the benefits of broadband connectivity.

Previous needs assessments conducted in rural Northwest Florida indicate that broadband is a key factor in many rural community economic development efforts. The more successful efforts were often the result of IT/broadband technicians who possess a complement of knowledge and abilities that include advanced technical skills as well as management, supervisory, and critical thinking skills.

The project's research will focus on the educational and career pathways of IT technicians who support broadband deployment in rural communities in Northwest Florida. The project will identify the workplace roles and economic development importance of broadband technicians; the education needed to be successful in these roles; the processes to sustain partnerships between educational and industry stakeholders; and the rural economic development can be promoted by individuals with these key skills. This study will contribute to the ongoing development of iSchool literature that seeks to understand the use of information technology by those responsible for its facilitation and by those for whom the technology is newly acquired.

3   Research Questions

RQ 1. How do the IT/broadband skills graduates gain through two-year community college programs compare to the needs expressed by employers in rural/metropolitan areas?

RQ 2. How do the IT/broadband skill graduates gain through two-year community college compare to the skill sets new professionals identify they need after they are hired as IT employees in rural/metropolitan areas?

RQ 3. What, if any, gaps exist between the skill rural/metropolitan employers report their IT/broadband employees need and the skill sets new professionals report they need to be successful as IT/broadband employees?

RQ 4. What, if any, differences are there between the skills needed for IT/broadband employees in rural and metropolitan areas?

RQ 5. How can two-year community college IT/broadband program curricula are modified to best meet the specific needs of employers and IT/broadband employees in rural/metropolitan areas?

4   Project Deliverables

This study design will develop several project deliverables for the Northwest Florida region including a descriptive typology of the career pathways for IT/broadband; a typology of rural IT/Bb technician roles; identification of gaps between rural employer needs and current two year curricula; and, revised curricula that address the gaps of current technician education in rural communities. A key element of the project is to enhance the network between Tallahassee Community College (TCC and Chipola College (Chipola) and their stakeholder rural employers. A crucial element of this research will be the matching of community college curriculum with employer needs in an attempt to promote economic development in rural Northwest Florida.

5   Methodology

Overview of Methods: This research will include a multi-method approach, including qualitative and quantitative methods and a secondary data analysis of existing data.

1. Literature Review of two-year educational pathways and an environmental scan of all schools involved to establish known pathways and describe emerging pathways for diverse student bodies. will be examined and defined and included in the study. The environmental scan for each school will include a list of all class, curricula, faculty and employers involved and a review of the major impacts on the school over the preceding five years.

2. Content Analysis of Chipola, and TCC IT Course Syllabi and Learning Outcomes: This method will be used to develop lists of skills gained by students who successfully complete IT coursework. Syllabi of all undergraduate IT/broadband courses at Chipola, and TCC will be collected and analyzed through an iterative process using open and axial coding. This analysis will be completed twice (at the beginning and toward the end of the project), with the first version informing the development of other instruments, and the second version allowing the research team to use updated information to inform curriculum suggestions.

3. Content Analysis of IT Job Ads and Job Postings in Northwest Florida: A purposive sample of job ads and postings gathered through all available sources such as contacts at Chipola, and TCC, newspapers, and online job postings will be used to develop a list of job requirements for IT/broadband positions in the area. The sample will be stratified by rural/metropolitan classifications. This analysis will be completed twice (years one & three), with the first version informing the development of other instruments.

4. Semi-Structured Interviews with IT/Broadband Educators: Semi-Structured Interviews with IT/broadband educators at Chipola, and TCC: A purposive sample of 16-20 educators responsible for curriculum development and classroom delivery will be interviewed, with proportional representation. These interviews will be used to explore factors in curriculum development and delivery and to understand the relationship between faculty and industry stakeholders.

5. Semi-Structured Interviews with IT/Broadband Hiring Managers in Northwest Florida: A purposive sample of 16-20 Northwest Florida employers. An interview schedule to measure employer needs can be identified from the literature review, senior personnel input and the project objectives. In addition, a skills card sort can be employed with skills sets from the course syllabi and job ads/posting analyses informing this part of the instrument.

6. Focus Groups with New Professional IT/Broadband Employees in Northwest Florida: Four focus groups will be conducted (two of employees of rural organizations and two of employees of metropolitan organizations). Two purposive samples of IT employees (one for each focus group) will be developed by asking IT/broadband hiring managers to identify potential participants from their organizations.

On-site Classroom Observations and Secondary Data Analyses of previous needs assessments will also be conducted to ensure face validity of findings.

6   External Evaluation and Assessment Plan

Project evaluation will focus on formative and summative measures. Formative aspects of the evaluation will center on the conduct of the research, the quality and trustworthiness of the research methods undertaken, the quality of the collaboration among TCC and Chipola, dissemination efforts and the sustainability of the research and its application. Summative evaluation will focus on the extent to which the researchers met their goals and the impact the research products, outputs had and potentially will have on IT/broadband education in two-year colleges.

7   Conclusion

In this project, the researchers will investigate how to break down the walls to broadband-enabled economic development by identifying effective and sustainable preparation for IT/broadband technicians in Northwest Florida. This project supports the NSF Merit Review criteria through local, action research that will topple walls of resistance to technology transfer with sensitive approaches to culture and context using new broadband technology that supports these rural communities, and will be key, innovative addition to iSchool research and literature.

8   References

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