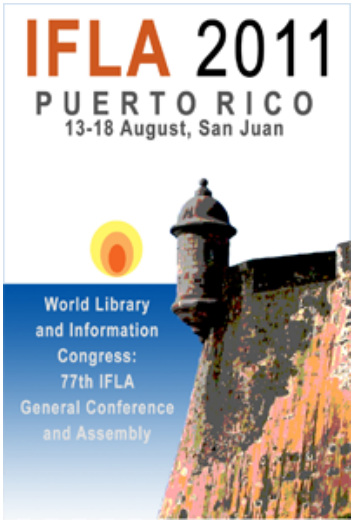
http://conference.ifla.org/ifla77 Date submitted: May 18, 2011



Mapping the Education of Rural Librarians' Technology Literacy and Management Training: Use of Mixed Data Collection Methods in the ITRL Program

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Meeting: **95 — Library Theory and Research Section with Statistics and Evaluation**

Abstract

This paper reports the use of mixed quantitative and qualitative data collection methods in the $567,660 grant entitled "Rural Library Professionals as Change Agents in the 21st Century: Integrating Information Technology Competencies in Southern and Central Appalachian Region" (ITRL) funded by the Institute of Museum and Library Services' Laura Bush 21st Century Librarian Program to the School of Information Sciences at the University of Tennessee. Mixed methods in the ITRL are helping to map the education of sixteen rural librarians' technology literacy and management training as they complete their master's degree part-time from June 2010–August 2012 in the UT's SIS synchronous distance education program.

Keywords
LIS education, rural libraries, IMLS grant, Southern and Central Appalachia, technology literacy and management training.

1.0 Introduction

This paper reports use of mixed quantitative and qualitative data collection methods in the $567,660 grant entitled "Rural Library Professionals as Change Agents in the 21st Century: Integrating Information Technology Competencies in Southern and Central Appalachian Region" (ITRL) recently funded by the Institute of Museum and Library Services' Laura Bush 21st Century Librarian Program to the School of Information Sciences (SIS) at the University of Tennessee (UT). The ITRL purpose is to train sixteen paraprofessionals working in the Southern and Central Appalachian (SCA) rural libraries to complete their master's degree part-time from

June 2010–August 2012 in the UT's SIS synchronous distance education (DE) program**.** The grant combines work experience in regional libraries with graduate instruction that focuses on information technology (IT) and rural librarianship to prepare ITRL students for leadership roles in their libraries to apply technology literacy and management training in helping their communities address some of their unique debilitating circumstances (e.g., information poverty, unemployment, economic hardships, low levels of information literacy, lack of IT access/use, etc.) (Appalachian Regional Commission, 2004; Bardwell et al., 2009; Mehra, Black, & Lee, 2010).

2.0 Education in the ITRL Context

ITRL students are enrolled part-time, taking six credit hours (two courses) each semester (summer, fall, and spring) beginning June 2010. Forty-two credit hours (14 courses) plus a comprehensive examination or thesis are required for graduation. Students will graduate in August at the end of their second academic year. IT deliverables for rural libraries in the SIS courses include: 1) Technology infrastructure planning and analysis; 2) Web design, development, and usability; 3) Database design and implementation; 4) Building digital library and web portals; 5) Establishing hardware and software networking; 6) Creating Library 2.0 tools. Management outcomes in rural library courses include: 1) Service evaluation in rural libraries; 2) Management of a rural library program for adults and children/young adults; 3) Reader's advisory; 4) Grant writing and development.

ITRL students are receiving a structured, individually-tailored curriculum with formal and informal professional mentoring by educators and practitioners. The list of courses and schedule is available at URL: http://www.sis.utk.edu/itrl/course_requirements. The ITRL curriculum is structured in that students are expected to take the three SIS required courses (providing knowledge of the core functionalities in the profession, namely, information environments, information representation and organization, information access and retrieval), six courses focusing on IT, and five courses on rural library management and services. There is, however, also inherent flexibility in the implementation of the ITRL curriculum that is individually-tailored based on the following (Mehra, Black, Singh, and Nolt, in press): 1) Course sequence and choice may be modified on a limited basis depending upon individual student's interests, skills, prior experiences, and scheduled course offerings during various semesters; 2) Each ITRL student's elective courses integrate their unique experiences in their SCA environments since the tangible products that students individually develop in their course assignments are expected to be directly applicable in their local libraries and communities; 3) The four ITRL students in the school media track take a partially altered list of courses based on the state certification requirements and each student's specific career path.

The use of the UT SIS' cutting-edge synchronous DE technology allows for real-time online interactions between the instructor and the students amongst each other in the virtual classroom via voice over Internet protocols that make the interactive experience a truly unique offering in this part of the country (Kumbhar, 2009; Marek, 2009; Mehra and Robinson, 2009). ITRL courses are delivered synchronously using Saba Centra 7.6 software (online delivery system for the SIS DE program), "an online learning environment that combines a highly interactive virtual classroom learning, e-meeting, and web seminar platform with a learning content management system to deliver optimal blended learning" (Saba Centra, n.d.). In addition,

Blackboard 7.0 (Blackboard, n.d.) and e-mail are serving as asynchronous communication and information-sharing tools. The purpose of the mixed qualitative and quantitative data collection utilized in the program is to track the progress in technological literary and management education of the sixteen ITRL students and thereby measure the value and effectiveness of the ITRL program.

ITRL students are provided scholarships for full tuition for their master's degree and a general stipend that might be used to cover travel expenses, books and fees, and costs to cover technology. Each ITRL student is also provided a laptop computer. ITRL students are being assisted in choosing electives and designing independent research projects that enrich and complement their other educational experiences. The most effective electives and research projects have been identified and documented for future refinement and use.

3.0 Research Participants

The sixteen ITRL students who are working also as paraprofessionals in the SCA libraries are the focus of the ITRL program (Mehra et al., 2010). Each ITRL student is immersed in her/his rural library though s/he is developing specific IT outcomes in their courses that are especially designed and developed in response to their particular rural library environment. All assignments, additional resources and support, and measurements are conducted based on advice provided by an assigned faculty educator advisor and practitioner-mentor. Table 1 presents the demographic characteristics of the ITRL student body in terms of student sex, race/ethnicity, geography, type of library, and work title.

Sr. No.	Demographic Category	Comments
1.	Sex	female (14), male (2)
2.	Race/Ethnicity	White/Caucasian (16)
3.	Work Geography [State (City/Town)]	TN (Athens, East Ridge, Kingsport, Knoxville, Lebanon, Mountain City, New Market, Sevierville) = 9, KY (Barbourville, Harlan) = 2, VI (Big Stone Gap, Goshen) = 2, GA (Dahlonega) = 1, MD (Hancock) = 1, NC (Marshall) = 1.
4.	Type of Library	public library (5), county public library (3), county school system (2), community college library (2), elementary school library (2), research and education center (1), university library (1).
5.	Work Title	acquisitions assistant (1), branch manager/program specialist (3), circulation assistant (1), director (2), elementary school teacher/media team member (1), information specialist (1), instructional supervisor for materials and supplies (1), library media specialist (1), library technical assistant (1), library technologist (1), resource center/education coordinator (1), reference librarian (1), technology software support specialist (1).

Table 1: The demographic characteristics of the ITRL student body.

An educator-practitioner team is providing each ITRL student professional orientation, mentoring, and guidance in their formal coursework to integrate IT while developing comprehensive solutions for rural libraries in the SCA region. The role of the 16 ITRL practitioner-mentors is described in detail at URL: http://www.sis.utk.edu/itrl/details-participation. The role of the ITRL practitioner-mentor and the ITRL faculty advisor is to provide the ITRL student guidance through their educational process, identify IT and rural management deliverables in the SIS courses, and develop best practices for the rural library where the ITRL student works. ITRL practitioner-mentors are working with the ITRL students and the three ITRL faculty educators to tailor individual student's academic program in integrating IT competencies to meet the needs of their rural library and community. Lead personnel from the four grant partnering institutions (Clinch-Powell Regional Library, Clinton, Tennessee; Nolichucky Regional Library, Morristown, Tennessee; Sevier County Public Library System, Sevierville, Tennessee; and the Watauga Regional Library, Johnson City, Tennessee) are included as ITRL practitioner-mentors and have been selected to participate in the ITRL program based on their leadership, role, knowledge, networks, experience, and interests to participate in promoting IT-based development and change in the SCA libraries and their communities. In addition, rural librarians with master's degrees from other states in the SCA region are also represented as practitioner-mentors and they are helping each ITRL student relate ongoing experiences to the application of information science and IT to develop best practices. Table 2 presents the demographic characteristics of the ITRL practitioner-mentors in terms of their sex, geography, type of library, and work title.

Sr. No.	Demographic Category	Comments
1.	Sex	female (11), male (5)
2.	Work Geography [State (City/Town)]	TN (Chattanooga, Clinton, Johnston City, Kingsport, Knoxville, Morristown, Sevierville) = 8, VI (Big Stone Gap, Clifton Forge, Cumberland, Norton, Richmond) = 5, KY (Combs, London) = 2, NC (Boone) = 1.
3.	Type of Library	regional library (4), county public library (3), community college library (2), elementary school library (2), public library (2), state library (1), university library (2).
4.	Work Title	continuing education consultant (1), director (8), district director (1), media specialist (2), music librarian (1), professor and librarian (1), reference librarian (1), system director (1).

Table 2: The demographic characteristics of the ITRL practitioner-mentors.

The three ITRL faculty educators are the main advisors of the ITRL students regarding matters of course content and planning, in consultation with the practitioner-mentors as needed. The ITRL students are communicating with their ITRL practitioner-mentor and ITRL faculty advisor at least once a semester (via phone, email, face-to-face, etc.) or more depending on specific matters as the need arises to discuss issues and concerns about the ITRL program. Instructors of courses planned for the ITRL students include tenured and tenure-leading faculty and adjunct faculty and lectures (including rural librarians and practitioners) hired by the SIS. Other administrators and staff are helping to facilitate and implement various grant activities and

address some of the challenges that come up owing to issues of administrative bureaucracy, policies and procedures, etc.

The last (though not least) group involved in the ITRL program as research participants (broadly defined) are the community partners and others invested in promoting growth and progressive changes in the SCA region while seeking tangible and practical solutions relevant in the 21st century. Our realization of this group and its interest emerged during the recruitment stage of the ITRL program beginning October 2009 and since when more than 200 individuals have established contact (and continue to do so) with the lead author regarding their curiosity, support, and possible involvement. We established the UTSIS-ITRL listserv to insure information flow and communication with this group (URL: http://listserv.utk.edu/cgi-bin/wa?A0=UTSIS-ITRL&X=76D25422C12065BC9D&Y=bmehra%40utk.edu). During April/May 2010, as part of the needs assessment stage in the ITRL program, we involved some members from this group formally in the research process when we conducted qualitative interviews and focus groups with fifty rural librarians in the region about their circumstances and challenges experienced as a part of their work activities in the rural settings and the possible role of LIS education to address some of their marginalizing situations. The feedback collected during that effort is beyond the scope of this paper since those research findings are reported elsewhere in significant detail (Mehra, Black, Singh, and Nolt, forthcoming) though the feedback and data collected during that time provided us with a richer understanding of the SCA context and informed the process of effectively mapping the educational journey of the ITRL students.

4.0 Use of Research Methods and Discussion

This section briefly reports on analysis of our research experiences in the ITRL program based on the participation and involvement of different stakeholder groups and the use of the research methods to collect feedback from every group. Only select data collected from some of the methods are presented in this paper to maintain brevity and owing to limitations of space. Mixed methods in the ITRL program are providing complementary quantitative and qualitative feedback collected from students, practitioner-mentors, educators/instructors, and the SCA librarians and others throughout the project's five phases of: student recruitment; information needs analysis; implementation of educational/training; mentoring; program outcomes evaluation; and results dissemination. This paper focuses on only the data collection methods used to gather feedback from the students with limited statements regarding the strategies used with other stakeholders. See Table 3 for a summary of the use of mixed research methods to gather data from the different stakeholder groups involved in the ITRL program.

No.	Stakeholder Group	Research Methods Used
1.	Students	• In-depth narrative essay submitted as part of application • Strategic academic plan • Advising sessions and ongoing communication • Course participation and interactions, SAIS course evaluations, and course grades • Qualitative interviews during odd-numbered semesters • Quantitative surveys delivered pre-and-post course in even-numbered semesters • Sharing during ITRL Annual Summits
2.	Practitioner-mentors	• Structured information flow and communication at least once a semester with educator advisor and student individually and/or collectively • Email surveys every semester • Ongoing interactions as matters crop up
3.	Educators/instructors and administrators	• Educator advisors meet on a weekly basis; Email survey on a yearly basis • Course instructors communicate on an ongoing manner as matters crop up; Emails surveys distributed every semester • Other administrators and staff report on an ongoing manner as matters crop up
4.	Appalachian rural librarians and community members	• Ongoing information and communication exchanges (via f-t-f, phone, email, and UTSIS-ITRL list) • Presentations and publications at professional conferences and venues facilitate networking and data collection • Press releases, feature stories, and ITRL website development facilitate networking and data collection

Table 3: Use of mixed research methods to gather data from different ITRL stakeholder groups.

The various efforts in data collection are being made to identify and evaluate expectations and accomplishments of all participants involved in the ITRL program throughout the process and time frame of the grant to provide formative and summative evaluations. At the conclusion of the ITRL program, the project team will conduct exit interviews with the students. Summary information will be incorporated into the final report to IMLS and shared with the rural library communities. In addition to the data collection methods identified in this paper to map the education of rural librarians' technology literacy and management training, a follow-up survey of participants/employers/supervisors after completion of the ITRL program will establish its overall effectiveness. All of the feedback collected during this research is helping to gain information to improve student course assignments, exercises, and projects for their communities. In addition, it is allowing for a better understanding of the technology and management needs of rural librarians in the SCA region.

A limitation of the data collection methods in the ITRL program is that the voluntary participation in every aspect of the research process means that not all individuals in a given population (e.g., students, practitioner-mentors, interested SCA librarians) are providing

feedback. This could lead to skewed results, particularly with students who might only choose to participate when they have strong positive or negative responses to share about the ITRL program. Additionally, the small size of the student population gives quantitative results limited value (hence, use of other complementing methods used in data collection); plus, the number of participating students from pre-to-post class surveys may vary significantly, making comparative analysis somewhat problematic.

4.1 Students: Multiple methods were instrumental in capturing the varied nature of student experiences and details of their educational journey in the ITRL program. The following are select ITRL data collection strategies that were used to gather feedback and analyze the effectiveness of students' experiences in developing IT course applications for their rural environments. The role of each data collection strategy is also identified in terms of how that method was useful to map the technology literacy and rural management training for the ITRL students.

4.1.1 Developing Context of the Journey in Assessing Applicant's Skills, Rural Library, and Community: Use of In-depth Narrative Essays.

As part of their application materials, potential students interested in the ITRL program were asked to submit in-depth narrative essays (with at least 150 words response each to twelve questions) to gather feedback in three sections profiling their individual capabilities and skills, library context, and community characteristics (for detailed list of questions see URL: http://www.sis.utk.edu/files/ITRLScholarshipProgramApplication.pdf). In addition, to be eligible to apply to the ITRL program, a key requirement was for the applicants to be currently working in a rural SCA library. In conjunction with the other elements of their application to meet the graduate school and the SIS requirements (e.g., GPA and GRE scores, official transcripts, personal data form and statement of intent, recommendation letters, etc.) a content analysis of the in-depth narrative essays helped program administrators (i.e., the three ITRL faculty educators) evaluate each applicant's individual skills and understand their rural libraries and context of their local communities. The individual applicant skills were evaluated in terms of their writing abilities, critical and reflective skills, immediate and long range career plans, comfort with technology and technology use, description of their strengths in meeting ITRL goals, and possible impact of the grant in their lives and in the life of their communities. Regarding their rural library, ITRL applicants were asked to describe its vision, collaborative work practices, interaction with professionals holding a master's degree, work in individual and group-managed projects, important IT management issues facing their library, and change in their library over the next ten years. Regarding their community, ITRL applicants were required to share their opinion about how their library was important to the community, identify who their typical library patrons were, and what library services they used most. The use of the in-depth narrative essays provided us a rich context about each applicant and helped establish those candidates who would potentially be a "best match" to meet the ITRL goals and objectives. It also provided detailed information that helped map future progress of the ITRL students.

4.1.2 Laying Out a Road-Map, Knowing Where the Student Is Heading: The Strategic Academic Plan.

All ITRL students were expected to attend an online and f-t-f new student orientation at the beginning of the ITRL program to introduce them to the program expectations, people, policies and procedures, and student life-cycle in the SIS. This helped all students develop an initial

understanding of their journey in the ITRL program. By the end of their first semester, each ITRL student developed a strategic academic plan that identified their career path/choice including the kinds of IT and management outcomes they planned to develop in each of their courses based on a study of course syllabi used in past semesters. In consultation with their educator-practitioner team, each ITRL student was expected to identify their personal learning objectives, course recommendations, and research projects to enhance IT skills with rural library applications. IT and rural management deliverables that each ITRL student identified for each course were meant to be used in their rural library and community. ITRL students also developed profiles of work/position descriptions and IT expectations during this process. Each work/position profile incorporated specific IT content and management application. The strategic academic plan helped each ITRL student explicitly recognize how and what they were going to achieve while participating in the ITRL program. It is a work in progress as the ITRL student's journey in the SIS program enfolds though it will provide some form of structure to make the ITRL experience meaningful and relevant. For example, the following is a select portion for one ITRL student's strategic academic plan regarding the course IS 565 (Digital Libraries) and what s/he wants to achieve during the course. Such descriptions for all the elective courses in the ITRL curriculum were presented by each ITRL student in their strategic academic plan.

> "IS 565 Digital Libraries. *Currently:* We have done very little digitizing in our library, although numerous materials are being now stored at our center in digital format. So we need plans for both digitizing materials for dissemination and also a records management plan for digital records. This is a big challenge for non-profits. *Goals:* Develop ideas and plans and carry out a project for developing [name of agency] capacity as a digital library. We are working to organize and develop a digital/on-line finding aid for our library and I would like to connect that project in this class. I also am interested in thinking through an on-line version of our [name of agency] historical timeline, which will serve as a guide for researchers and others interested in more detail about [name of agency] work. We want to connect with other libraries holding [name of agency]-related items. We also need a records management plan for our institution, both for real and virtual files and materials. This class may provide support for that effort."

4.1.3 Ongoing Checks and Bounds: Advising Sessions to Regularly Track Student Experiences. In order to provide a structured mechanism in place to maintain ongoing communication, formal advising sessions have been planned with the educator advisor at least twice a semester (beginning and end-of-the-semester) to touch-base with the ITRL student, monitor, and coordinate the formal educational program, IT studies, and work experiences. So far, these have been conducted f-t-f or via phone based on individual student's circumstances. Such communication has been in addition to several ad hoc email/phone/f-t-f exchanges with each ITRL student to address any matters of concern, issues, unforeseen situations, and/or moments reflecting student need. Advising sessions have provided opportunities for ITRL students to maintain ongoing communication that have often acted as checks and bounds to ensure that the journey is going on track based on meeting the expectations, objectives and specific conditions of the University, the SIS, and the ITRL program.

4.1.4 Monitoring Student Performance along the Way: Course Participation and Interactions, SAIS Course Evaluations, and Course Grades.
Each ITRL student has shared their course experience, point of view, thoughts on performance, and development of course deliverables via multiple channels of their choice. These have included: ITRL student participation in real-time text-chat and asynchronous blog and/or discussion list contributions, course discussions, contributions in course assignments, and feedback collected via the online SAIS course evaluation system. Student's performance has been evaluated as reflected in their course grades. These have provided us a way to monitor and acknowledge student's performance in response to their experiences collected during the process to continuously make changes and improvements accordingly at the forthcoming steps along the journey. The fact that the three educator advisors are teaching select courses in the ITRL curriculum has helped along this process.

4.1.5 Assessing Short-Term Milestones: The Qualitative Student Experience.
Qualitative interviews are being conducted with voluntary participation of the sixteen ITRL students during the odd-numbered semesters, alternating with the quantitative surveys. Interviews are conducted during the middle of every other semester synchronously via Saba Centra or in select cases using email. Four-eight open-ended questions during the narrative interviews focus on overall experiences of the ITRL program, experiences in current courses, influence of assignments on student's professional work in their rural libraries, benefit of course applicability and impact of course content on their library work practices, challenges students are experiencing in the process, and improvements that can be made for future course iterations. Interview using the Saba Centra software have lasted approximately 20-30 minutes per student. Feedback in these interviews is audio-recorded, converted to mp3s in Saba Centra 7 Recording Studio and transcribed using Express Scribe. Participants are referred to with labels 1-16 where each student has a consistent number throughout their education and only the coder has access to the key revealing student identities. Qualitative feedback has helped us collect rich, detailed, and semi-structured feedback on an individual student basis about the value and benefit of the course experience, applicability of the course assignments, improvements in course design, etc. For example, the following is select statement shared by one ITRL student regarding the IS 554 (Public Library Management and Services) experience in response to the question on assignments value and future improvements. The analysis of such qualitative data collected during each course will be reported in future publications.

> "We are just on the second exercise, so we're not very far along, but I like them because they give some structure but they don't dictate all the structure so they're open enough for me to be able to adapt them to what I want to think about and do. I like that it is structured and systematic and I'll be able to see as I make my way through, but I do think I may not have time in the semester to do as much in depth as I want, but it sets up a structure where I can follow up. That's relating to a structure of trying to assess a kind of research training for community groups that we could be doing differently than what we do now or that we haven't been doing but used to do, so that's kind of a question I've been wanting to think about, I don't know that I can do enough interviews to help me know the answer to that by the end of the semester, but I'll have a good basis, and it's also making me think about how do we document what we do better."

4.1.6 Evaluating Short-Term Milestones: The Quantitative Measurement of Student Feedback. Quantitative surveys are being conducted with volunteer participation of the ITRL students at the beginning and end of every even-numbered semester, alternating with the qualitative interviews. Quantitative online surveys consist of 23-28 questions rated 1-5 (with 1 having the least value and 5 having the most value) and are made available pre-and-post course experience during the particular semester. Surveys are developed for each elective course in the ITRL curriculum being taught in the even-numbered semesters and are hosted on the SIS website, password protected, and using standardized survey development software. The questions in the survey are based on analysis of course goals and objectives, course content and topics represented, and course assignments and expectations. Participation is anonymous and the completed surveys are emailed directly to a research assistant. Results are compiled in Excel and the pre-and-post course survey results are compared. Table 4 compares the pre-and-post course results collected using an online survey for IS 585 (Information Technologies) during fall 2010. The IS 585 pre-course survey is available at URL: http://www.sis.utk.edu/IS585survey and the IS 585 post-course survey is available at URL: http://www.sis.utk.edu/IS585survey2. The analysis of such quantitative data collected during each course will be reported in future publications.

Question	**Pre-Course Mean (n=11)**	**Post-Course Mean (n=8)**
How much do you know about the storage and preservation of digital data?	2.27	3.25
How much do you know about the access and distribution of digital data?	2.27	3.25
How much do you know about computer system components (hardware)?	2.64	3.875
How much do you know about the functions of and relationships between system and application software?	2.45	3.75
How much do you know about data communications networks, including the internet?	3.0	3.875
How much do you know about the architecture and components used to support current WWW?	2.0	3.25
How well do you think you can identify, evaluate, and select hardware, software and network components appropriate for supporting delivery of information services and resources?	1.91	4.125
How much do you think this course will contribute to your general IT skills?	4.55	4.75
How well do you think materials covered in the course syllabus match your expectations for this program?	4.09	4.625
How useful do you think the discussion board will be to you in this course?	3.0	3.375
How much do you hope to learn in this course about the functions and relationships between computer system components (hardware)?	4.36	4.375
How much do you hope to learn in this course about the functions and relationships between system and application software?	4.45	4.25

How much do you hope to learn in this course about the functions of data communications networks, including the internet?	4.64	4.0
How much do you hope to develop the ability to identify, evaluate, and select hardware, software, network components appropriate for supporting delivery of information services and resources in this course?	4.27	4.5
How much do you hope to learn in this course about the architecture and components used to support current World Wide Web-based information systems?	4.364	4.125
How useful do you think working on team projects in this course will be?	3.0	4.0
How good do you think the grading methods in this course are?	4.18	4.875
How important is understanding data storage in your professional work at your library? [How useful was Assignment 1?]	3.82	4.625
How important is understanding system software and security in your professional work at your library? [How useful was Assignment 2?]	4.36	4.5
How important is understanding the internet in your professional work at your library? [How useful was Assignment 3?]	4.64	4.5
How important is understanding databases/information management in your professional library work? [How useful was Assignment 4?]	4.73	4.75
How important is understanding Web 2.0 and Library 2.0 in your professional work at your library? [How useful was Assignment 5?]	4.0	4.75
How useful do you think this course will be to you in your professional work at your library?	4.18	5.0
How much do you think this course will change the way you interact with your library patrons?	4.55	4.125
How important do you think this course will be in helping you serve your community's IT needs?	3.82	4.875
How much do you think you know about IT compared to your average community member?	4.73	4.875
[Note: The questions in the post-course survey gathered student feedback regarding how they perceived they had achieved the stated objective].		

Table 4: Comparison of pre-and-post course results using an online survey for IS 585 (Information Technologies) during fall 2010.

4.1.7 Sharing and Disseminating Short-Term Student Outcomes in the ITRL Annual Summits. ITRL students are expected to summarize the IT and rural management deliverables that they develop during their courses every year in the ITRL Annual Summits. Students will record short presentations that will be made available online and circulated amongst professionals and others invested in rural library communities in the SCA region. This will help disseminate ITRL experiences within the larger body of professional and non-professional population and provide recognition of ITRL students' efforts over the past year.

4.2 Practitioner-Mentors, Educators/Instructors and Other Administrators/Staff: The practitioner-mentor and educator advisor of each ITRL student are communicating and meeting (via f-t-f, phone, email, teleconferencing, etc.) at least once a semester (if not more) with each other and with their protégé in advising and mentoring them to take charge of their journey to

identify and create relevant, meaningful, and usable IT and rural management outcomes for their SCA rural library and community. Interactions between the practitioner-mentor and educator advisor at least once each semester (if not more to address concerns as they come up) are helping to coordinate educational and training efforts for the ITRL students. Plus, every semester each practitioner-mentor is receiving an email survey to report feedback over the past semester's activities; the questions in the survey inquire about their perception of their students' experiences in the ITRL program, their experiences of being an ITRL mentor, and the effectiveness of communication between practitioner-mentor and ITRL student in terms of: regularity of time period, methods used, topics of discussion, uniqueness of ITRL experiences, challenges in communication and those experienced by ITRL student in the program, key aspects of being an ITRL practitioner-mentor, beneficial aspects of ITRL for the student and the practitioner-mentor, suggestions to improve benefits, and additional comments. A close working relationship between the practitioner-mentor and educator advisor is allowing early identification and remediation of any academic deficiencies for the ITRL student. Educator-advisors are meeting on a weekly basis to discuss ITRL matters, issues of concern, and strategies to address situations that come up regarding each ITRL student's progress and journey in the program. An email survey received every year is gathering additional feedback from each educator advisor. Course instructors are reporting issues that need immediate attention to the ITRL faculty in an ongoing manner, in addition to feedback that is collected from each course instructor via an email survey distributed every semester. Other administrators and staff are providing feedback and advice on financial policies, effort certification, scheduling and course enrollment, distribution of in-state and out-state tuitions, fees and stipends, and other matters as they need to be addressed.

4.3 SCA Rural Librarians and Community Members: Regular updates are being provided to SCA rural librarians and other community members who have shown interest in the ITRL program via email, phone conversations, and postings on the UTSIS-ITRL listserv. On an ongoing basis this group is sharing current news, happenings, and event information etc. regarding rural library affairs with the educator advisors, practitioner mentors, and ITRL students. Such exchanges are helping to maintain timely updates to content covered in ITRL courses, rural management and IT application and integration in the rural library, and keeping ITRL students informed and responsive to current professional needs and expectations. Presentations and publications about the ITRL program (URL: http://www.sis.utk.edu/node/10729) are helping to disseminate ITRL results and program experiences at professional conferences for agencies such as the Association for Library and Information Science Educators (ALISE), American Society for Information Science and Technology (ASIS&T), American Library Association, Tennessee Library Association (TLA), etc. where exchanges with the larger professional community are providing awareness of trends, practices, and latest developments in rural libraries at the local, regional, and national levels. ITRL students are being encouraged to present papers at these professional venues where they are getting opportunities to tell others about the program, formally through presentations and informally in conversations. Press releases and feature stories about the ITRL program are also helping facilitate networking and positive exchanges with rural librarians and community members. Development of the ITRL website is another resource that is helping in these efforts.

5.0 Conclusions

This paper presented a brief discussion on the use of complementary mixed methods that are being used throughout the duration of the ITRL grant activities. Select examples of collected

data and glimpses of analysis show the need to integrate the concept of multiplicity in order to complement the strengths and weaknesses that exist in application of isolated and narrow strategies. The process of application of the data collection methods in the ITRL program acknowledged these factors of multiplicity in its inclusion of voices representing different stakeholders (e.g., ITRL students, practitioner-mentors, educator advisors, course instructors, administrators and staff, rural librarians, and community members), implementation of quantitative and qualitative instruments to gather varied datasets, formal and informal opportunities for data collection, and use of different modes of data collection strategies (via f-t-f, phone, email, teleconferencing, interviews, online surveys, etc.), amongst other efforts. The importance and role of each data collection effort was important in relation to mapping the education of the ITRL students in technology literacy and management training. The varied quantitative and qualitative data collected during formal and informal evaluations, ITRL Annual Summits, and semester-meetings between practitioners and educators, amongst other strategies, have yielded valuable insights in how to enrich the information science curriculum. Mixed methods in ITRL data collection are providing a holistic understanding of the student's experiences and integrating an outcome-based, results-oriented approach in the curriculum design to bring progressive changes in the SCA regions.

6.0 Acknowledgements

The authors appreciate the recently funded IMLS grant that is supporting the research and data collecting efforts reported in this paper. We gratefully acknowledge the generous contributions of various stakeholders involved in the ITRL program.

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