2013

Role clarity and instructional technology support: A naturalistic examination of various perceptions of the role of the ITRT within and across three high schools

Ann Nash
Virginia Commonwealth University

Follow this and additional works at: https://scholarscompass.vcu.edu/etd

Part of the Educational Leadership Commons

© The Author

Downloaded from https://scholarscompass.vcu.edu/etd/2975

This Dissertation is brought to you for free and open access by the Graduate School at VCU Scholars Compass. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of VCU Scholars Compass. For more information, please contact libcompass@vcu.edu.
Role clarity and instructional technology support: A naturalistic examination of various perceptions of the role of the ITRT within and across three high schools

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

by

Ann Marie Nash

B. S. Psychology, James Madison University 1996
B. S. Political Science, James Madison University 1996
M. Ed., James Madison University 1998

Director: Dr. Jonathan D. Becker,
Assistant Professor, Educational Leadership

Virginia Commonwealth University
Richmond, Virginia
April 2013
Acknowledgment

The end of my journey has finally come. I was not sure when I would actually arrive and without the help and support of so many people I’m not sure I ever would have. I would like to specifically thank a few people.

I would like to thank my husband, Victor, and our children, Raechel, Sydney, and London, for their understanding and patience while I was tucked away studying and writing. I would like to thank my parents for allowing me to use their home for a quiet place to work, a PC I could use for my data analysis, lots of coffee to keep me going and sometime a babysitter.

I would also like to thank Dr. Jon Becker for his help, direction, persistence and encouragement. I would like to thank Dr. Whitney Newcomb, Dr. Joan Rhodes, and Dr. Brit Watwood for their excitement over my topic, excellent feedback and conversation.

Last but not least, I would like to thank my friends, colleagues and classmates who helped and encouraged me along the way. All of these people helped me move inch by inch toward this goal and I am grateful to every single one: Dr. Chris Corrallo, Ms. Nicole Kessinger, Dr. Bob Lowerre, Dr. Jenny Murphy, Dr. Meredith Parker, Mrs. Melanie Phipps, Mrs. Debbie Roethke, Dr. Martha Wall-Whitfield. There are so many others, I hope you know that you all are appreciated!
# Table of Contents

List of Tables ........................................................................................................ vi
List of Figures ...................................................................................................... vii
Abstract .............................................................................................................. ix
I. Introduction ...................................................................................................... 1
   Statement of the Problem ............................................................................. 1
   Rationale for the Study ............................................................................. 3
   Research Methods .................................................................................... 4
   Findings and Conclusions ...................................................................... 6
II. Literature Review .......................................................................................... 7
   History of Schooling ................................................................................. 7
   Technology in Education ......................................................................... 10
      History of educational technology. ..................................................... 11
      Effectiveness of educational technology ............................................. 13
   Professional Development ......................................................................... 16
   The Virginia ITRT Program ..................................................................... 19
   This School Division’s ITRT program .................................................... 20
      ITRT role ............................................................................................. 20
      Role clarity for instructional technology support personnel. ............. 24
      Role Clarity and Job Performance ....................................................... 25
III. Design and Methodology .......................................................................... 30
   Researcher Perspective ............................................................................. 30
   Research Design: Multicase Study ......................................................... 31
   Setting ....................................................................................................... 32
   Cases .......................................................................................................... 33
   Data Collection Strategies ........................................................................ 36
      Interviews of school principals ......................................................... 37
      ITRT data collection ............................................................................ 38
      Survey of staff ..................................................................................... 39
      Focus group discussions ................................................................... 42
   Data Management and Analysis ............................................................... 43
      Data gathering across cases ............................................................... 44
      Triangulation within cases ................................................................. 45
      Cross-case analysis ............................................................................. 45
   Limitations of Design ............................................................................. 45
IV. Individual Cases .......................................................................................... 47
   Case Study 1: Deidre Aoife High School ................................................. 47
      Case setting ......................................................................................... 47
      ITRT background .............................................................................. 47
      Principal background ........................................................................ 48
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff background</td>
<td>48</td>
</tr>
<tr>
<td>Setting the stage</td>
<td>50</td>
</tr>
<tr>
<td>Training and professional development</td>
<td>53</td>
</tr>
<tr>
<td>Photojournalistic observations</td>
<td>58</td>
</tr>
<tr>
<td>Overall impressions</td>
<td>61</td>
</tr>
<tr>
<td>Disconnect does exist</td>
<td>63</td>
</tr>
<tr>
<td>Case Study 2: Taylor High School</td>
<td>68</td>
</tr>
<tr>
<td>Case setting</td>
<td>69</td>
</tr>
<tr>
<td>ITRT background</td>
<td>69</td>
</tr>
<tr>
<td>Principal background</td>
<td>70</td>
</tr>
<tr>
<td>Staff background</td>
<td>70</td>
</tr>
<tr>
<td>Setting the stage</td>
<td>72</td>
</tr>
<tr>
<td>Training and professional development</td>
<td>74</td>
</tr>
<tr>
<td>Photojournalistic observations</td>
<td>81</td>
</tr>
<tr>
<td>Overall impressions</td>
<td>84</td>
</tr>
<tr>
<td>Disconnect does exist</td>
<td>86</td>
</tr>
<tr>
<td>Case Study 3: Osbourne High School</td>
<td>91</td>
</tr>
<tr>
<td>Case setting</td>
<td>91</td>
</tr>
<tr>
<td>ITRT background</td>
<td>91</td>
</tr>
<tr>
<td>Principal background</td>
<td>92</td>
</tr>
<tr>
<td>Staff background</td>
<td>92</td>
</tr>
<tr>
<td>Setting the stage</td>
<td>94</td>
</tr>
<tr>
<td>Training and professional development</td>
<td>96</td>
</tr>
<tr>
<td>Photojournalistic observations</td>
<td>102</td>
</tr>
<tr>
<td>Overall impressions</td>
<td>107</td>
</tr>
<tr>
<td>Disconnect does exist</td>
<td>109</td>
</tr>
<tr>
<td>V. Cross Case Analysis of Case Results</td>
<td>114</td>
</tr>
<tr>
<td>Common Thread: ITRT as Software and Web 2.0 Trainer</td>
<td>118</td>
</tr>
<tr>
<td>Common Thread: ITRT as Assistant in Planning Integrated Lessons</td>
<td>122</td>
</tr>
<tr>
<td>Differences: Focus on 21st Century Skills</td>
<td>124</td>
</tr>
<tr>
<td>Differences: Focus on Co-Teaching</td>
<td>125</td>
</tr>
<tr>
<td>Differences: Focus on Data</td>
<td>127</td>
</tr>
<tr>
<td>Differences: Focus on Troubleshooting</td>
<td>128</td>
</tr>
<tr>
<td>Differences: Focus on District-Wide Responsibilities</td>
<td>129</td>
</tr>
<tr>
<td>Perceptions vs. Reality</td>
<td>130</td>
</tr>
<tr>
<td>VI. Discussion and Conclusion</td>
<td>133</td>
</tr>
<tr>
<td>Summary</td>
<td>133</td>
</tr>
<tr>
<td>Discussion</td>
<td>135</td>
</tr>
<tr>
<td>Conclusion</td>
<td>141</td>
</tr>
<tr>
<td>Implications</td>
<td>142</td>
</tr>
<tr>
<td>Policy</td>
<td>142</td>
</tr>
<tr>
<td>Professional development</td>
<td>143</td>
</tr>
<tr>
<td>Research</td>
<td>144</td>
</tr>
<tr>
<td>List of References</td>
<td>146</td>
</tr>
<tr>
<td>List of References</td>
<td>147</td>
</tr>
<tr>
<td>Appendix A</td>
<td>156</td>
</tr>
</tbody>
</table>
List of Tables

Table 1 ........................................................................................................................................ 116
Table 2 ........................................................................................................................................ 125
List of Figures

Figure 1. Respondents at Deidre Aoife High School breakdown by content area. .... 49
Figure 2. Respondents at Deidre Aoife High School breakdown by years of experience. ................................................................. 50
Figure 3. Mrs. Cassidy lesson planning one-on-one. ................................................................................................................. 52
Figure 4. Social network analysis for training Web 2.0 at Deidre Aoife High School. .... 53
Figure 5. Social network analysis for training software at Deidre Aoife High School. ..... 54
Figure 6. Social network analysis for planning technology integrated lessons at Deidre Aoife High School. ................................................................. 55
Figure 7. Mrs. Cassidy modeling instructional technology. ................................................................................................................. 57
Figure 8. Daily Activities at Deirdre Aoife High School. ................................................................................................................. 59
Figure 9. Mrs. Cassidy preparing for training. ................................................................................................................................. 60
Figure 10. Mrs. Cassidy modeling instructional strategies. .............................................................................................................. 60
Figure 11. Positive, negative and neutral metaphors at Deidre Aoife High School. ..... 62
Figure 12. SNA with years of experience and planning lessons. ............................................................................................................. 64
Figure 13. Social network analysis for troubleshooting at Deidre Aoife High School. ... 65
Figure 14. Social network analysis for installing software at Deidre Aoife High School. 66
Figure 15. Social network analysis using data to plan instruction at Deidre Aoife High School. ................................................................. 68
Figure 16. Respondents at Taylor High School breakdown by content area. .... 71
Figure 17. Respondents at Taylor High School breakdown by years of experience. ... 72
Figure 18. Mrs. Lewis as technology resource. ................................................................................................................................. 73
Figure 19. Social network analysis for training software at Taylor High School. ..... 75
Figure 20. Social network analysis for training Web 2.0 at Taylor High School. .... 76
Figure 21. Social network analysis for planning integrated lessons at Taylor High School. ............................................................................................................. 77
Figure 22. Social network analysis for using data at Taylor High School. ........ 78
Figure 23. Mrs. Lewis modeling instructional techniques. ......................................................................................................................... 81
Figure 24. Daily Activities at Taylor High School. ................................................................................................................................. 82
Figure 25. Mrs. Lewis training one-on-one. ................................................................................................................................. 83
Figure 26. Mrs. Lewis modeling instructional strategies. ................................................................................................................................. 83
Figure 27. Mrs. Lewis as technology resource. ................................................................................................................................. 84
Figure 28. Positive, negative and neutral metaphors at Taylor High School. ........ 85
Figure 29. SNA with years of experience and planning technology-integrated lessons. 87
Figure 30. Social network analysis for troubleshooting at Taylor High School. ......... 88
Figure 31. Social network analysis for installing software at Taylor High School. .... 89
Figure 32. Social network analysis for using data to plan instruction at Taylor High School. ............................................................................................................. 91
Figure 33. Respondents at Cox High School breakdown by content area. ................ 93
Figure 34. Respondents at Cox High School breakdown by years of experience. ..... 94
Figure 35. Mr. Cox training one-on-one. ................................................................................................................................. 96
Figure 36. Social network analysis for training Web 2.0 resources at Osbourne High School. ............................................................................................................. 97
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>Social network analysis for training software at Osbourne High School</td>
<td>98</td>
</tr>
<tr>
<td>38</td>
<td>Social network analysis for planning integrated lessons at Osbourne High School</td>
<td>99</td>
</tr>
<tr>
<td>39</td>
<td>Mr. Cox offering assistance to a student</td>
<td>101</td>
</tr>
<tr>
<td>40</td>
<td>Daily Activities at Osbourne High School</td>
<td>103</td>
</tr>
<tr>
<td>41</td>
<td>Mr. Cox as instructional technology resource</td>
<td>104</td>
</tr>
<tr>
<td>42</td>
<td>Mr. Cox as a technology resource for Google forms</td>
<td>104</td>
</tr>
<tr>
<td>43</td>
<td>Mr. Cox creating learning resources</td>
<td>105</td>
</tr>
<tr>
<td>44</td>
<td>Mr. Cox working on district level projects</td>
<td>106</td>
</tr>
<tr>
<td>45</td>
<td>Mr. Cox training one-on-one</td>
<td>106</td>
</tr>
<tr>
<td>46</td>
<td>Metaphors by attribute at Osbourne High School</td>
<td>108</td>
</tr>
<tr>
<td>47</td>
<td>Social network analysis for troubleshooting at Osbourne High School</td>
<td>110</td>
</tr>
<tr>
<td>48</td>
<td>Social network analysis for installing software at Osbourne High School</td>
<td>111</td>
</tr>
<tr>
<td>49</td>
<td>Social network analysis for using data to plan instruction at Osbourne High School</td>
<td>112</td>
</tr>
<tr>
<td>50</td>
<td>Social network analysis for learning software across all schools</td>
<td>120</td>
</tr>
<tr>
<td>51</td>
<td>Social network analysis for learning Web 2.0 across all schools</td>
<td>121</td>
</tr>
<tr>
<td>52</td>
<td>SNA for integrated lesson planning across all schools</td>
<td>124</td>
</tr>
</tbody>
</table>
Abstract

ROLE CLARITY AND INSTRUCTIONAL TECHNOLOGY SUPPORT: A NATURALISTIC EXAMINATION OF VARIOUS PERCEPTIONS OF THE ROLE OF THE ITRT WITHIN AND ACROSS THREE HIGH SCHOOLS

By Ann Marie Nash

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2013

Director: Dr. Jonathan D. Becker,
Assistant Professor, Educational Leadership

Role clarity for any individual leads to more successful implementation of his or her job expectations. In a school, there are many individuals with various roles to fill. The Instructional Technology Resource Teacher (ITRT) has multiple roles within a school including: training teachers, designing integrated curriculum, managing learning resources, modeling instructional strategies, acting as a technology resource, assisting content specialists, and preview and recommending software. This study found that stakeholders in schools consistently recognize the ITRT as both a trainer and designer of integrated lessons. Other instructional support roles are recognized only by some
stakeholders in schools. When a greater emphasis is placed on 21st Century skills throughout the school, there is greater consistency in the perceptions of the roles of the ITRT by stakeholders.
Role clarity and instructional technology support: A naturalistic examination of various perceptions of the role of the ITRT within and across three high schools

I. Introduction

Statement of the Problem

In education, more and more teachers are trying to effectively integrate technology. In order for teachers to integrate technology effectively they need instructional support (Giordano, 2008). According to Lawless and Pellegrino (2007), how that support is best structured has yet to be fully understood. The structure of support provided by school divisions ranges on a continuum from broad, division-wide initiatives to narrowly focused subject specific programs, and even further to individual teacher support.

The Virginia Department of Education (VA DOE, 2008) recognized the need for someone to be available at the school level to help teachers learn to integrate technology. The position of Instructional Technology Resource Teacher (ITRT) (also called educational technologist, educational technology specialist, integration specialist, technology coordinator, technology resource teacher, and technology trainer) was established to be that resource. According to *Instructional Technology Resource Teacher: Guidelines for Teachers and Administrators* (the *ITRT Guidelines*) published by the VA DOE (2008), “ITRT are intended to be teachers of teachers, providers of technology professional development, and supporters of instruction” (p. 20). Methods
employed by the ITRT to provide professional development give teachers opportunities to apply and experiment with newly acquired technology skills and integration techniques. The VA DOE (2008) states, “The primary responsibility of ITRT is to provide professional development to help teachers integrate technology into the curricula” (p. 14). Given the alignment between the duties for the ITRT outlined by the job description for the school division and in the VA DOE the ITRT Guidelines, the ITRT program implemented in the job description should meet the expectations of the ITRT, the schools, the school division, and the State of Virginia. Research recommends “that administrators be able to recognize effective technology use and support the integration efforts of their teachers” (Virginia Department of Education [VA DOE], 2007, p. 3).

The ITRT relationship with school leadership and staff determines the effectiveness of school-based support for teachers (Mangin, 2007). In other words, effective facilitation of instructional improvement requires a clear understanding by those parties of the role of and expectations for the ITRT regarding achievement of that support. To this point, few examinations of the role clarity of the ITRT position have been conducted. While there is no consensus on how to best facilitate technology integration, years of organization theory and research stress the importance of clarity and consistence of role. Furthermore, the Instructional Technology Resource Teacher: Guidelines for Teachers and Administrators (VA DOE, 2008) stresses the need for a common understanding of the role of ITRT.

The school division in Virginia under study here has established a division-wide instructional framework to drive initiatives for improving instruction. The framework is outlined in detail on the district’s website. At the school level, the specific method to
achieve that improvement would center on selected instructional strategies. More narrowly, individual teachers may elicit support from the Instructional Technology Resource Teacher (ITRT) to improve instructional practice by learning a new technology tool and how to appropriately integrate that tool to create a more engaging classroom and student centered environment. The intention of these structures is to provide support for teachers. Specifically, the role of the ITRT is to provide technology related instructional support for teachers.

**Rationale for the Study**

The main focus of the ITRT, as described by the school division and the state, is instructional; however, the extent of the instructional role of the ITRT varies at different school locations. A deep understanding of perceptions of the role will help the school division begin to understand why the role varies from school to school. This understanding will aid the school division to establish practices that can improve the role clarity and ultimately the effectiveness of the ITRT. Employing a multi-case research design, the researcher will conduct a study of role clarity of the ITRT. The researcher will explore and document how the main stakeholders in three high schools perceive the role of the ITRT through surveys, interviews, and the collection of digital images during on-site observations.

The research questions guiding this study are:

1. What is the perceived role of the ITRT by school leadership?
2. What is the perceived role of the ITRT by school staff?
3. What is the self-perceived role of the ITRT?
4. How closely matched are those perceptions of the role of the ITRT?
5. How closely matched are the perceptions of the ITRT to the reality of the ITRT role?

The examination of various perceptions of the role of the ITRT will show how the perceptions relate to each other and how they relate to the overall goal, improving instructional practices. The goal of this work is to help school leaders understand the impact role clarity has on what the ITRT can accomplish in the school building and improve the function of the ITRT as a facilitator of instructional improvement.

Research Methods

According to the school division website in May 2010 this particular school division comprised of 68 schools: 9 high schools, 14 middle schools, and 45 elementary schools. A one-to-one laptop initiative began during the 2000-2001 school year during which laptops were distributed to teachers and students in all high schools. The participants in this study are the ITRTs, school principals, and teachers from three high schools in this school division. The position of ITRT was classified under the Department of Staff Development. The selection of schools to be examined during this study was based on the recommendation of the Director of the Department of Staff Development. Additionally, each high school was considered a comprehensive high school and employed greater than 100 classroom teachers.

Data was collected from the participants at each site using interviews, surveys, and photographic images. All questions from the interviews and the surveys focused on personal beliefs about technology skills and student success, the school emphasis on technology integration, the perception of job duties of the ITRT, and teacher expectations concerning technology integration. To determine the perceived role of the
ITRT by school principals, the researcher used semi-structured guided interviews. To determine the perceived role of the ITRT by assistant principals and school staff an online survey was used. Each ITRT was shadowed for one day during which time photographic images were taken to represent the activities and responsibilities performed. The images related each school’s ITRT were used during the focus group to direct questions and prompt discussion. As part of the survey, participants were asked to describe the role of the ITRT using a metaphor. The metaphors were categorized and compared to emerging patterns relating to the perceptions of the role of ITRT.

To determine how these perceptions support or hinder the job of the ITRT follow-up focus group discussions were conducted with volunteer teachers from each school. The focus group interviews used a semi-structured interview guide based on the themes emerging from administrative interviews, the online survey data, metaphors, and the ITRT digital images.

All collected data was analyzed within each school as a single case. The data collected during this study came from interviews, surveys, and digital images. Each interview was analyzed using NVivo data analysis software. The teacher survey results and ITRT survey results were evaluated using a Social Network Analysis module (NodeXL) with Microsoft Excel 2010. This analysis allowed for a comparison of the perceptions by teachers and ITRT of the ITRT role. The images were compared to the tasks identified during the interviews and surveys. They were classified as either ITRT tasks or non-tasks based on the data emerging from the interviews and surveys. The focus group discussion were transcribed and analyzed for emerging patterns and
themes. The data collected from interviews, surveys, and images offered triangulation to clarify how the role of the ITRT is perceived in each school.

Findings and Conclusions

Role clarity for any individual leads to more successful implementation of his or her job expectations. In a school, there are many individuals with various roles to fill. The Instructional Technology Resource Teacher (ITRT) has multiple roles within a school including: training teachers, designing integrated curriculum, managing learning resources, modeling instructional strategies, acting as a technology resource, assisting content specialists, and preview and recommending software. This study found that stakeholders in schools consistently recognize the ITRT as both a trainer and designer of integrated lessons. Other instructional support roles are recognized only by some stakeholders in schools. When a greater emphasis is placed on 21st Century skills throughout the school, there is greater consistency in the perceptions of the roles of the ITRT by stakeholders.
II. Literature Review

History of Schooling

The purpose of schooling changed as society progressed through the Agrarian and Industrial Ages. Tyack (1974) explained how leading school advocates, at the turn of the 18th century, argued that schools were not progressing quickly enough to help students be prepared to meet the changing demands of agriculture, much less the developing technological urban society. Reigeluth and Avers (1997) present several characteristics from the Agrarian and Industrial societies which demonstrate the major societal paradigm shifts of that time. One example is the transition of the main form of transportation and transport of goods from the horse to the train, which facilitated faster movement of raw materials and finished goods. Another example is how the structure of the family contracted from large extended families to smaller nuclear families. The descriptions from Tyack along with Reigeluth and Avers show how changing trends in industrialization, demography, and urbanization altered country life and why schools had to adapt to meet the changing needs.

Tyack (1974) described the school system that emerged to meet the needs of the changed educational environment. Schools morphed from community-based schoolhouses to centrally organized mass-educational systems. The curriculum changed from any available content to curriculum specifically designed to teach values and vocational skills. Industrial advancement and the efficiency of the factory created a
desire to organize schools in a similar fashion including division of labor, punctuality, and chain of command. School became the means for transforming the pre-industrial culture, values, and attitudes, work habits, time orientation, and even the recreations of citizens in a modernizing society. The structure of schools supported the educational goals and concentrated on teaching necessary factory job skills and obedience through a focus on attention, punctuality, regularity, and silence until this system became viewed as dehumanizing for students (Sherritt & Basom, 1996).

In the early 1900’s, according to Tyack (1974), schools sought ways to rehumanize themselves. There was increased concern about reaching poor, immigrant children. Teachers were trained in new instructional strategies incorporating curiosity as part of a natural learning process. Throughout schools, there was recognition of individual differences and a need to modify schools and diversify instruction to accommodate for those differences. The doctrine of social efficiency took root, which demanded schools “prepare students for the tasks they would face in life . . . the old idea that a common school grounding in the three R’s would suffice for any career . . . was clearly absurd” (Tyack, 1974, p. 188).

As society now progresses from the Industrial Age to the Digital Information Age, the purpose of schooling is as contested as ever. According to Reigeluth and Avers (1997), as society progressed from the Industrial Age into the Information Age, the educational system continued to “teach large group[s] of learners a fixed amount of content in a fixed amount of time” even though educators recognized the unique educational needs of individual students (p. 134). Reigeluth and Avers also present characteristics to demonstrate major societal paradigm shifts into the Information Age.
Transportation transformed from the train to the plane and automobile. The structure of the family contracted from nuclear families to single-parent families. Sherritt and Basom (1996) list more indicators of the changing social characteristics. Women enter the workforce at higher and higher rates; the number of minorities and immigrants continues to increase; technology continues to develop and “has outpaced our human capacity, shrunk the world and automated many tasks” (p. 287).

However, schools have constantly been at the back end of that progress and have traditionally been the last to change. As the National Association of Secondary School Principals (1986) acknowledged over a quarter century ago that

Our industrial age curriculum is not meeting the needs of information age students . . . schools are doing a reasonably good job teaching basic facts and skills, the knowledge and skill required for employment in an industrial society. But we are not teaching the higher level thinking skills that are basic to an information society. (p. 1)

According to Fang, Kang and Liu (2004) a paradigm shift will only occur “when an anomaly undermines the basic beliefs underlying the basic practice” of the original paradigm (p. 298). Jeremy Rifkin, president of the Foundation on Economic Trends, believes that we are on the cusp of that anomaly. In an interview, Rifkin said

For over a century, the mission of American education has centered, almost exclusively, on the rather narrow task of preparing the next generation to be productive in the market place. Now on the threshold of the Information Age, we face the very real challenge of redefining the nature of work itself. The Industrial Age ended slave labor. The Information Age is likely to end mass wage labor,
freeing up millions of people for work outside the marketplace. Preparing the
next generation for work in both the marketplace and the civil society may be the
single most important task facing our school system. (as cited in Slavin, 1996, p.
609)

Schools are failing to prepare students for the Information Age of the 21st
Century. Alvin Toffler, author of *Future Shock*, in an interview by James Daly for
*Edutopia* (2007), insists that students are “operating in a system that is completely out
of time. It is a system designed to produce industrial workers” (p. 52). And, according
to Alan Blinder a Princeton economist, the goal of education today should be to produce
a “flexible labor force that can cope more readily with non-routine tasks and
occupational change” (as cited in Friedman, 2006, p. 302).

**Technology in Education**

In addition to higher level thinking skills, technology integration is high on the list
of good instructional practice needed to prepare students for the Information Age. Six
Kappa Delta Pi Laureates have identified technology in the classroom as one of the top
elaborates on the experiences of and expectations for this generation in his book, *The
World is Flat*. He illustrates how this and future generations of children are born into a
world rich in technology and so technology is accepted as a natural part of their world.
Students are able to understand and use these technologies almost innately. Prensky
(2001) names the individuals of these generations “digital natives” (p. 1). Prensky also
argues plainly that the way students of today learn has fundamentally changed. He
goes further to describe many of the characteristics of digital natives.
Digital Natives are used to receiving information really fast. They like to parallel process and multi-task. They prefer their graphics before their text rather than the opposite. They prefer random access (like hypertext). They function best when networked. They thrive on instant gratification and frequent rewards. They prefer games to “serious” work. (p. 2)

Prensky (2001) describes digital immigrants as people who have adapted to the ubiquitous technology, but who still have an “accent.” This accent is demonstrated by actions such as when a person turns to “the Internet for information second rather than first, or [reads a] manual for a program rather than assuming that the program itself will teach us to use it. . . [or prints] out . . . email . . . [or] a document written on the computer in order to edit it” (p. 2).

**History of educational technology.**

Technology in the classroom can be traced back to the 19th century when blackboards made their début as a method for displaying information visually. “The first documented use of a blackboard in the United States was in 1801, when George Baron, an instructor at West Point Military Academy, used one to teach math” (Ellen, 2009, First chalkboards, para. 1). Over a century later, electricity together with photography would usher in the Visual Instruction Movement merging numerous visual and audio experiences with classroom instruction (Johnson, 2008).” In 1923, the most commonly used visual aids were excursions, flat pictures, maps, globes, charts, graphs, diagrams, models, stereographs, stereopticon slides, and moving pictures” (p. 54). By the 1950s, broadcast television became available to schools and the visual instructional field
became known as instructional technology. In the 1970s, video tape further expanded the resources available for teaching.

Swan et al. (2007) described the decades leading up to and including the beginning of the 21st Century as having increased technological innovation and changing pedagogical possibilities. *The Educators Manifesto* by McClintock described “three areas in which technological innovations [had] already changed what [was] pedagogically possible” (as cited in Swan et al., p. 481). Communication technologies have enabled schools and classrooms to open up and connect to the world; a multitude of multimedia presentation formats have enabled learners to display their learning using multiple intelligences; digital tools have allowed learners to “automate lower level intellectual skills . . . to concentrate on higher level thinking” (p. 482). To facilitate these types of learning experiences, a classroom is no longer sufficiently equipped for integrated learning if only one or multiple computers are present. Swan, Kratcoski, Mazzer, and Schenker (2005) describe how classrooms must be equipped with enough desktop and wireless laptop computers to provide all students with access to up-to-date computing and Internet access, enough mobile computing devices to for all students to take with them beyond the classroom, distance learning capacity, presentation systems, scanners, printers, digital cameras, video editing equipment, and a wide variety of digital peripherals and software to support teaching and learning. (p. 355)

Many of the main stakeholders in education have recognized the value of technology as a teaching tool and a means to effectively teach the digital native (Lawless & Pellegrino, 2007); however, having more tools does not lead to more
integration. “The challenge is not getting appropriate technology into classrooms, but getting those in classrooms prepared to use those technologies, and facilitating greater willingness to incorporate changing technologies as they emerge” (Buckenmeyer, 2010, p. 27). Because many of today’s teachers are digital immigrants, their accent or lack of knowledge about using and integrating the newer technologies, makes teaching digital natives more difficult. Inan and Lowther (2010a) examined the influences that affect teacher technology integration. Their study indicated that the years of teaching can influence technology use both directly and indirectly. . . . veteran teachers’ readiness and technology integration were lower in comparison to novices. This pattern is an indication that new graduates have more knowledge on technology integration and feel better prepared compared to more experienced peers. (p. 147)

Purcell, Heaps, Buchanan, and Friedrich (2013) recently conducted a study for the Pew Research Center involving over 2,000 middle and high school Advanced Placement (AP) and National Writing Project (NWP) teachers. This study showed a pattern for teachers according to years of experience as well. Teachers with fewer years of experience were likely to feel more confident than their more experienced teaching counterparts. Additionally, this pattern was very closely related to the age of teachers. As the age of teachers increased and years of experience increased, the teachers were more likely to feel that their students were more knowledgeable concerning new digital technologies than the teacher him- or herself.

Effectiveness of educational technology.
To help teachers learn and incorporate technology as a seamless component of their instructional practice and better prepare students for the Information Age, a large investment has been made on high quality professional develop opportunities.

Brill and Galloway (2007) found that when teachers ideas were congruent with the idea that technology has a positive influence on teaching and learning, the teachers were better able to engage their students through the integration of technology. Bebell and Kay (2010) reported “strong evidence that student engagement increased dramatically in response to the enhanced educational access and opportunities” (p. 21). Mann (2008) reported on the educational advantages technologically integrated instruction can yield by surveying teachers, students, and parents concerning laptop use and comparing those results to standardized test scores. A major conclusion from Mann’s (2008) research indicated that there was a positive curricular impact when teachers used technology more consistently in the classroom. During this three-year study, results indicated that “more laptop use is associated with higher test scores [in] Biology, World History I, Chemistry, US History, Reading and Earth Science” (Mann, 2008, p. 7). Wenglinsky (1998) used the 1996 National Assessment of Educational Progress (NAEP) data for mathematics to evaluate the relationship between uses of educational technology. His study found that more technology use does not necessarily equate to more achievement. What does matter is how that technology is used. Campuzano, Dynarski, Agrodini, and Rall (2009) found through an evaluation of 10 software products implemented in numerous states, districts, and schools over a two year period that there was no statistically significant improvement in student achievement and in some cases there was a negative product effect. However, results
from the evaluation of the NAEP data showed, at the secondary level, "using computers for higher-order thinking skills is associated with more than a one-third of a grade level increase" (Wenglinsky, 1998, p. 3). Lesisko, Wright, and O'Hern (2010) also found "an increase in student learning with regard to curriculum content" (p. 11).

Shapley, Sheehan, Maloney, and Caranikas-Walker (2010) found that "when teachers at a school shared understandings about the use of technology for learning and were supportive of technology integration, implementation was stronger at both the classroom and student levels" (p. 44). Wenglinsky (1998) concluded, "when teachers are proficient enough to direct students toward productive uses more generally, computers do seem to be associated with significant gains" (p. 32). Mann et. al (1999) further reported that "putting hardware in a room without training teachers or otherwise supporting the integration of technology into the classroom cannot be expected to make a difference" (p. 30). "Given that . . . 1:1 programs depend largely on teachers for success, it [is] not surprising that teacher preparation through professional development [is] important for successful implementation" (Bebell & Dwyer, 2010, p. 10). The research study by Purcell et. al (2013) found a similar opinion from teachers. Teachers participating in the focus group felt that sometimes technology was forced on them by schools or districts in an effort to have the newest or latest thing rather than focusing on the need for the tool to improve learning. During focus group discussion, a common theme emerged which showed that teachers were concerned about adding technology into lessons “without discernible, demonstrable added value to the learning process” (p. 49).
These studies illustrate the growing demand for teachers to integrate technology as part of their classroom instruction. It has become imperative for schools to integrate technology in order “to equip graduates with the skills that they need to be successful in a world of global and increasingly digital competitiveness” (Mann, 2008, p. 29). An evaluation of West Virginia’s Basic Skills/Computer Education (BS/CE) program illustrates that increased achievement can be accomplished through “a sustained technology initiative” (Mann, Shakeshaft, Becker, Kottkamp, 1999, p. 14). Research and collaboration skills are improved through technology integrated lessons and educational opportunities according to evidence provided by Bebell and Kay (2010). The results from Mann (2008) also show how technology integration can lead to greater inclusion of “group, team and cooperative work [which] is a hallmark of 21st Century Skills Partnership preparation” (p. 29). The West Virginia study (Mann et. al, 1999) illustrates the progress that can be made when integrating technology in to the curriculum. The study concludes, “Sixty-two percent of the American workforce is already ‘knowledge-workers,’ people who focus on creating, organizing and communicating information. BS/CE is a major part of positioning [West Virginia’s] children for that future” (p. 40).

**Professional Development**

To attain the promise of 21st Century teaching and learning, teachers must keep abreast of changes in standards, learn new instructional methods and learn to integrate new instructional technology effectively. Professional development, therefore, is a critical component of the teaching profession. However, Lawless and Pellegrino (2007) report that “the state of teacher professional development [is] inadequate” (p. 575).
Many districts offer numerous opportunities; however, simply providing more time for the professional development of teachers is not effective. The goals of high quality professional development should relate to the mission of the school and have an impact on student achievement (Guskey, 1999; Lawless & Pellegrino, 2007). Therefore, schools must conduct high quality professional development activities that will contribute to the lifelong learning of teachers and improve the quality of instruction they provide to students.

Buckenmeyer (2010) recommends merging technology application training with content-based professional development opportunities in order to facilitate the necessary high quality professional development. Senge (1990) named this continued growth and improvement personal mastery; it is a key component of a learning organization. Hirsh (1999) also agrees on the importance of linking staff learning to student learning and that staff development should increase student performance. “A significant challenge to schools is selecting the staff development approach that aligns most clearly with the assumptions and beliefs of staff members and produces the results desired for students” (Hirsh, 1999, p. 39).

The types of professional development opportunities available for teachers are many and varied. The continuum of opportunities ranges from large group training and workshops to small study groups to individualized one-on-one opportunities for growth. Each professional development structure varies according to the desired outcome of the opportunity as well as the process of and follow-up for learning. According to Wei, Darling-Hammond, Andree, Richardson, and Orphanos (2009), effective professional development has several characteristics including three foci: “enhancing teachers’
knowledge of how to engage in specific pedagogical skills and how to teach specific kinds of content to learners. . . . [and] a focus on student learning” (p. 3). Further, “a strong focus on content — rather than simply providing a forum for teachers to talk — has proved critical to improving teacher’s competence” (p. 5). Active participation by teachers during professional learning experiences gives teachers the opportunity to apply and experiment with new skills.

This is especially true when learning how to use technology to support student learning. Lawless and Pellegrino (2007) summarize characteristics of high quality technology professional development. These characteristics include that the learning occurs over time, is meaningful and relevant, provides access to technology, and promotes a collaborative and communicative environment. Stevenson (1999) points out, teachers are “seldom given an opportunity to share knowledge about effective lessons and innovative techniques with their colleagues” (p. 5). Collaborative and communicative characteristics of high quality professional development provide a social component to learning which enables adult learners to work more effectively (Vavasseur & MacGregor, 2008).

Kanaya, Light, and Culp (2005) found two trends for teacher success when integrating new technologies. The first is a teacher’s comfort level with using the new technology. The second is the recognition by the teachers of the value for student learning by including the new technology integration skill. Both were determined to be significant determining factors in whether teachers implemented technology rich lessons. Brinkerhoff (2006) showed agreement in that providing hands-on, active experience for teachers during professional development increases the likelihood that
technology integration will be implemented. He further supported holding participants accountable for implementing newly acquired integration strategies by monitoring lesson plans and observing classroom lessons.

Another characteristic for high quality professional development, which increases the likelihood of transferring learned technology skills to classroom instruction, is duration. Wei et al. (2009) stated that “professional development that is sustained . . . has a greater chance of transforming teaching practices and student learning” (p. 7). Lawless and Pellegrino (2007) also suggest that “the best professional development activities are spread out over time with opportunities for follow-up learning and feedback” (p. 594). Kanaya et al. (2005) include intensity of training as a significant determining factor in whether teachers implement technology rich lessons. When the forty-hour training for the INTEL Teach to the Future program was completed in three or fewer months, teachers were more likely to implement more than one technology integrated lesson using the skills and tools learned (Kanaya, Light, & Culp, 2005).

The Virginia ITRT Program

The VA DOE recognized the need for a person to be available at the school level to help teachers learn to integrate technology. The position of Instructional Technology Resource Teacher (ITRT) (also called educational technologist, educational technology specialist, integration specialist, technology coordinator, technology resource teacher, and technology trainer) was established to be that resource. According to Instructional Technology Resource Teacher: Guidelines for Teachers and Administrators (the ITRT Guidelines) published by the VA DOE (2008), “ITRT are intended to be teachers of teachers, providers of technology professional development, and supporters of
instruction” (p. 20). Methods employed by the ITRT to provide professional development give teachers opportunities to apply and experiment with newly acquired technology skills and integration techniques. “Effective support focusing on curriculum and technology integration at the school site can be one-on-one, in small groups, by grade-level, by department, or by skill level by the ITRT in a coaching or mentoring role” (VA DOE, 2005, p. 5). The focus for the ITRT is always high quality “professional development to help teachers integrate technology. . . . The ultimate goal of the program is for all teachers to develop the knowledge, skill, and desire to integrate technology throughout the curricula” (VA DOE, 2008, p. 14).

This School Division’s ITRT program

**ITRT role.**

The ITRT are designed to be agents of instructional change. Through their involvement with teachers, the ITRT are undoubtedly engaged in curriculum development and lesson planning. This involvement begins to establish the role ITRT play in helping educators progress from Industrial Age to Information Age educational strategies. The VA DOE (2005) designed the *Instructional Technology Resource Teacher and Technology Support Positions: A Handbook For School Divisions (ITRT Handbook)* in order to help schools and divisions implement the program.

The VA DOE (2008) clarifies the ITRT job responsibilities by a focus on the words in the job title itself:

ITRT are - first and foremost - teachers, required to be licensed in Virginia as content area teachers with at least three years of experience. The first word – instructional - is the second most important part of the title; this separates them
from information technology and technical support positions. The technology
resource portion of the title indicates the job’s focus: ITRT are intended to be
teachers of teachers, providers of technology professional development, and
supporters of instruction. (p. 20)

The school division under study here has tried to establish expectations for the
ITRT that are clear and congruent with the expectations established by the VA DOE.
The job description received from the Assistant Director of the Department of Staff
Development outlined several specific duties for the position of ITRT (L. K. Thompson,
personal communication, January 21, 2009). According to the job description the ITRT:

- Trains teachers to implement the division’s instructional and administrative
  computing program;
- Assists with the preparation of long-range instructional computing
  plans/lessons/units of instruction focusing on the integration of computer
  technology into the county curriculum;
- Assists with the creation and management of information and learning resources
  including written and web-based publications;
- Models classroom strategies and assists classroom teachers in the
  implementation of the strategies;
- Serves as instructional computing resource to all teachers, principals, school
  staff, and central office personnel regarding computer applications;
- Works with content specialists to ensure best use of technology in each specific
  content area;
- Previews and assists in the selection of software.
These duties align with the duties and responsibilities outlined in the *ITRT Guidelines* (2008). According to these guidelines, the duties of the ITRT include:

- Working collaboratively with individual teachers or groups of teachers to integrate technology into instruction;
- Assisting with curriculum and content development;
- Disseminating information regarding technology resources, emerging technologies, best practices using technology, and professional development opportunities;
- Facilitating or conducting technology-related professional development for school staff;
- Assessing levels of teacher and student technology use and skills;
- Modeling effective instructional strategies using technology;
- Serving as a member of the school technology committee;
- Supporting implementation of the division and state technology plan;
- Researching use of newer technologies in instruction;
- Using data to design technology-based instructional strategies;
- Recommending hardware, software, and related resources;
- Identifying trends in software, curriculum, teaching strategies, and other educational areas;
- Creating learning resources for teachers, staff, and students;
- Serving as a strong advocate for technology integration;
- Participating in software selection and use. (p. 10-11)
Each of the duties and responsibilities outlined by the state correspond to and seem to overlap with the duties and responsibilities outlined by the school district. The first district responsibility corresponds to multiple state descriptions including: working collaboratively with individual teachers or groups of teachers to integrate technology into instruction; disseminating information regarding technology resources, emerging technologies, best practices using technology, and professional development opportunities; facilitating or conducting technology-related professional development for school staff; and assessing levels of teacher and student technology use and skills. The second district responsibility corresponds to multiple state descriptions including: assisting with curriculum and content development; disseminating information regarding technology resources, emerging technologies, best practices using technology, and professional development opportunities; using data to design technology-based instructional strategies; and serving as a strong advocate for technology integration. The third district responsibility corresponds to two state descriptions: disseminating information regarding technology resources, emerging technologies, best practices using technology, and professional development opportunities; and creating learning resources for teachers, staff, and students. The fourth district responsibility corresponds to two state descriptions: working collaboratively with individual teachers or groups of teachers to integrate technology into instruction and modeling effective instructional strategies using technology. The fifth district responsibility corresponds to multiple state descriptions including: disseminating information regarding technology resources, emerging technologies, best practices using technology, and professional development opportunities; serving as a member of the school technology committee;
and identifying trends in software, curriculum, teaching strategies, and other educational areas. The sixth district responsibility corresponds to one state responsibility: supporting implementation of the division and state technology plan. The last district responsibility corresponded to multiple state descriptions including: researching use of newer technologies in instruction; recommending hardware, software, and related resources; identifying trends in software, curriculum, teaching strategies, and other educational areas; and participating in software selection and use.

**Role clarity for instructional technology support personnel.**

The simple fact that the expected job responsibilities of the ITRT are clearly spelled out in the state department of education’s guidelines and by the job description established by the school division is no guarantee of role clarity at the school level. In fact, a 2007 study by the Office of Educational Research at Virginia Tech University (Virginia Tech study) found that the specific duties and responsibilities of ITRT differed significantly not only between school divisions but also between schools within school divisions (Burton et al., 2007). Fewer than 65% of ITRT modeled strategies for teachers and fewer than 55% designed lessons with teachers. Additionally, the Virginia Tech study indicated that some schools throughout the Commonwealth of Virginia assigned additional support duties to the ITRT outside the roles and professional responsibilities established through the VA DOE in the *ITRT Handbook*.

Based on the findings and recommendations of the Virginia Tech study, the VA DOE updated the original *ITRT Handbook* in order to facilitate more consistent implementation of the ITRT program in schools and more clearly establish the role the ITRT should play. It is not obvious, though, that continually updating a handbook will
have much effect on the congruence of the expected roles and the actual work of the ITRTs in Virginia though this congruence is very important.

Role Clarity and Job Performance

Lieberman (2004) reported in his synthesis of literature concerning role clarity among school counselors that “Despite the existence of . . . role statements, there continues to be disparity in the counselor role” (p. 556). The difficulty in establishing clear roles among instructional support persons is not a new phenomenon. Furthermore, there is a long body of research on the importance of role clarity within organizations. Bible and McComas (1963) concede, “effectiveness is congruence of behavior with expectations” (p. 227).

Karasek’s decision latitude model for occupational strain explains how high work demands and low job control lead to excessive strain on an individual (Bliese & Castro, 2000). In their study, Bliese and Castro (2000) examined role clarity in lieu of job decision latitude or job control. Bible and McComas (1963) defined an individual’s role as a set of expectations regarding the behavior of a person in a specific position that is dependent on the expectations of other members in the organization. Kerr (1978) supported that claim by describing role norms and expectations as complex because they are “partly developed by authorities and partly developed informally by individuals in the work place and partly by that person's peers” (p. 305). Bliese and Castro (2000) summarize the importance of social support as a means to mediate job strain in high work demands and low role clarity situations. They explain that Karasek’s decision latitude model was expanded to include support as a third dimension to buffer job strain.
Bliese and Castro (2000) found that “high role clarity did ameliorate the effects of high work overload, but only in groups where there was supportive leadership” (p. 71). They point out differences between role clarity and job control as in the original model, however Bliese and Castro (2000) also point to similarities:

Clearly the concept of ‘role clarity’ differs from that of ‘job decision latitude’. Low decision latitude suggests that an individual is restrained or unable to participate in important decisions. In contrast, low role clarity suggests that an individual does not know what actions should be performed (even if he or she has the latitude to do so). . . . In both cases, the employee is restricted in his or her ability to have an effective impact on the work situation . . . both measure one’s ability to have an effective impact on one’s environment. (p 71)

Lieberman (2004) summarized research concerning role clarity in the field of school counseling. Kendrick, Chandler and Hatcher are quoted by Lieberman (2004), “Two of the most significant stressors identified by professional school counselors are the lack of a clearly defined role and the overwhelming demands to perform tasks outside of the realm of school counseling training” (p. 555). A major point Bliese and Castro (2000) make is that a supportive leadership is essential.

In cases where job demands are high, both high role clarity and high decision latitude help individuals to cope with those demands . . . control and role clarity can have a buffering effect on work demands; however, . . . the buffering effects are relatively unimportant in the face of a contextual effect of low leadership support. (p. 71)
Lieberman (2004) makes the profound statement that “the ultimate responsibility for the appropriate and effective utilization of all school-based personnel resides with the school principal . . . [and] effective utilization requires clarity regarding the role and function of all school-based professionals” (p. 552). Davidson (2003) describes the conflicting ideas concerning the role of technology support personnel when this position first appeared in schools, “many administrators assumed that the role of the [ITRT] was to provide technical support . . . The [ITRT] had to find their own way toward elevating the issue of curricular planning as part of their role” (p. 736).

Davidson (2003) categorized the main roles of the ITRT as technician, teacher, resource specialist, and administrator. In this study, the ITRT position was developed by combining portions of each of these positions into a new position. This combination of roles made it difficult to clearly establish the expectations for the new position. One particular problem was that the “notion of the [ITRT] as a teacher was undergeneralized. . . . Within the school hierarchy, technology falls outside of the core, and thus the technology teacher is located on the periphery of specialists” (p. 737). Another problem that surfaced was the insufficient knowledge teachers and ITRT had in co-teaching. Many teachers “expected the [ITRT] to teach a separate computer class that would not require them to be present for that period. They also felt it was unnecessary to meet and plan the lesson with the [ITRT]” (p. 738). Additionally, while the ITRT had characteristics similar to those of an administrator, for instance not being responsible for a defined group of students and being tasked with reviewing school-wide needs and resources, “Being compared to an administrator in a hierarchical system in which
teachers and administrators are often at odds with one another was often not of benefit to the [ITRT]" (p. 739).

Davidson (2003) also examined the emerging role of the ITRT in terms space and time. While the space most closely associated with the ITRT is their office area, they also use a variety of temporary and transitional spaces as part of their role. Given that the nature of their work centers on helping teachers integrate technology, most of their time was spent in teacher classrooms. In terms of time, the daily schedule of the ITRT is different from that of a classroom teacher. Where the classroom teachers have a specific beginning and end to each class and a fluidity to their lessons, including some type of beginning warm-up, various activities, and a conclusion, the schedule of the ITRT is unique. Davidson (2003) describes the typical day for an ITRT.

An [ITRT], like all individuals in a networked school, usually starts the school day by checking e-mail. From there, however, the day can include an hour with one teacher, an hour with a technical problem in the computer lab, a half hour planning with the principal, and a couple hours meeting with other [ITRT]. On professional development days, [ITRT] may spend the entire day in training teachers or planning technology integration. (p. 742)

In sum, role clarity is an important predictor of effectiveness of an individual within an organization. Quoting Bible and McComas (1963) again, “effectiveness is congruence of behavior with expectations” (p. 227). Therefore, this study will investigate the role clarity of three high school ITRT in one public school division. This study will investigate the expectations of the ITRT according to the faculty in the school, the administration of the school and the assigned ITRT for that school. The
expectations will be compared to the duties outlined by the HCPS ITRT job description and the duties outlined by the *Instructional Technology Resource Teacher: Guidelines for Teachers and Administrators*. The findings will help schools understand how to increase the understanding of the role and, therefore, the overall effectiveness of the ITRT in schools.
III. Design and Methodology

**Researcher Perspective**

I began this study because I am an ITRT in this district. As an ITRT working in a district where there is a one-to-one computer initiative, I am often frustrated at things for which I am held accountable that seem to be out of my control. I am charged with increasing the integration of 21st Century skills in my school through direct work with teachers by coaching, modeling, and developing lessons, however, there is no drive or impetus for teachers to increase their integration skills. I began to wonder if the frustration I felt was due to various stakeholders not having a clear perception of my role in the school. It was clear that teachers would come to me for training or directions on how to use specific tools and sometimes for troubleshooting when various error messages would appear, but there were only a few teachers who were consistently willing and interested in working with me to develop their skills to integrate 21st Century instructional strategies. I began to compare other ITRT and their success to my own. I noticed a pattern that started with the administration in each building and spread to the staff. It seemed that when the administrative staff had a defined understanding of the role of the ITRT and the ITRT’s relationship to helping a staff develop 21st Century skills, the staff was also more involved in developing lessons and practices that helped them develop their own proficiency with 21st Century strategies. I was curious to
understand the perception of each stakeholder in different schools to determine how the alignment of perceptions impacted the job of the ITRT.

**Research Design: Multicase Study**

In order to examine ITRT role clarity, a mixed-methods, multi-case research design is the best choice for this study. Stake (2006) explains the need for a multi-case study in order to gain an understanding of a complex problem, especially when the cases are linked by an issue or phenomenon. Stake further suggests this format due to the “focus on relationships connecting ordinary practice in natural habitats to a few factors and concerns of the academic disciplines” (p. 10).

The main focus of the ITRT, as described by the school division and the state, is instructional; however, the extent of the instructional role of the ITRT varies at different school locations. Using a qualitative multi-case study approach will allow for an examination of the common characteristics of the ITRT role in the selected schools and also look closely at how the role is different at each unique location. A deep understanding will help the school division begin to understand if and why the role varies from school to school. This understanding will aid the school division in establishing practices that can improve the role clarity of the ITRT.

This study explored and documented how the main stakeholders in these schools perceive the role of the ITRT through surveys, interviews, and the collection of digital images during on-site observations. The study investigated how these perceptions compare within cases to determine the extent to which the ITRT’s role is clear in each school. Finally, the study explored the consistency of perception and extent of role clarity across and between cases.
Setting

This school division is the most appropriate setting for this study due to the dedication of the entire school system to integrate technology and the technological advances this school division has made during its implementation of a one-to-one computer initiative. According to the instructional framework for the school division, a main component for the school division is to increase student learning of 21st Century skills. Embedded strongly in that component of the framework is technology. According to the school division website in May 2010, this particular school division comprises 68 schools: 9 high schools, 14 middle schools, and 45 elementary schools. The VA DOE (2008) provides many demographic statistics about the school district. This school division has a population of approximately 3,868 teachers and 48,256 students. The free and reduced lunch percentage for the school district is 21.51%. The ethnicity breakdown of the student population is 35.7% African American, 5.6% Asian, 4.2% Hispanic, and 47.8% White and 6.7% other.

According to a presentation by the Director of Staff Development and the Director of Technology to the Educational Technology Advisory Committee in 2008, in terms of staff and students as well as in terms of technology, this school division has expanded tremendously since the implementation of a 1-to-1 computer initiative in 2001. That initiative distributed laptops to teachers and students in all high schools. During the following year, the initiative expanded to include all middle schools. Countywide in 2001, there were approximately 3,500 laptops in the hands of teachers and staff. The number of computers in the elementary school classrooms was 5,725. Furthermore, there were 410 computers on carts in the elementary schools in addition to the 2,800
computers in labs at all school levels. There were 1,500 wireless access points throughout the county, 62 wide-area networks and the internet speed was 4MB per second. By 2008, the number of teacher and staff laptops grew to nearly 4,900. The number of computers in the elementary school classrooms increased to close to 6,900. Furthermore, the number of computers on carts in the elementary schools increased to 1,550. The number of computers in labs at all school levels decreased to 1,910 but the number is still quite high given the one-to-one initiative at the middle and high school levels. The number of wireless access points grew to 3,000 throughout the county, the number of wide-area networks increased to 75 and the internet speed increased to 155MB per second.

In 2004, the Commonwealth of Virginia established the requirement that every school district hire one Instructional Technology Resource Teacher (ITRT) and one technology support person for every 1,000 students (Office of Educational Technology, 2005). In this school division, each secondary school has an in-house ITRT to provide staff development opportunities for teachers and classroom support for technology integration.

**Cases**

Stake (2006) suggests basing the priority for selecting cases on the opportunity to learn from each case and to “show how the program or phenomenon appears in different contexts.” (p. 27). Standard two of the Standards of Quality states that “Local school boards shall employ two positions per 1,000 students in grades kindergarten through 12, one to provide technology support and one to serve as an instructional technology resource teacher” (Standards of Quality, 2009). Since the enrollment at
each high school in this school division exceeds the stipulated amount of 1,000 students, every high school has one ITRT assigned and housed on campus (VA DOE, 2008). This regulation clearly establishes one ITRT per school confirming the school as the case in this study.

The position of ITRT falls under the Department of Organizational Development, Quality and Innovation (previously the Department of Staff Development). The Executive Director is in a unique position to recommend specific schools for this study because of his supervisory relationship with each of the secondary ITRT as well as his interaction with each administration at each school. His understanding of the function of the ITRT at each school, as well as the relationship between the ITRT and administration, gives the Executive Director the perspective needed to recommend schools which will offer the best opportunity for learning during this study. McMillan and Schumacher (2006) concur that this type of reputational case selection will provide the most exemplary cases to investigate the phenomenon of interest.

Based on the recommendation of the Executive Director, the schools to be examined during this study will include: Deirdre Aoife High School, Taylor High School and Osbourne High School. Each of these schools is representative of the population distribution in this county. Additional consideration for inclusion in this study was based on years of experience as a classroom teacher and as an ITRT. Mrs. Cassidy, the ITRT at Deirdre Aoife High School, had the most experience in the classroom at 12 years and has spent four of those years as an ITRT in the school division. Mrs. Cassidy was assigned as the ITRT at Deirdre Aoife High School in August 2010, the year in which this study was conducted. Her total of 12 years of experience in the classroom make
her the most experienced classroom teacher in this study. Mrs. Lewis, the ITRT at Taylor High School, gained 6 years of experience in the classroom before she became an ITRT. She spent an additional 10 years as an ITRT, and of those, eight were at Taylor High School specifically. Her total of 10 years of experience as an ITRT make her the most experienced ITRT in this study. Mr. Cox, the ITRT at Osbourne High School, is an experienced teacher with 6 years of classroom experience. He was a relatively new ITRT with 2 years of experience in the position for a total of 10 years of experience in education. His years of experience made him the most novice ITRT in this study. Given the differences in ITRT experience and total years in education, the investigation may show differences in the perception of their own role as an ITRT and the perception of the staffs and principals of the role of the ITRT.

The VA DOE (2009, 2010, 2012, 2013) details various statistics concerning all schools in the state. Deirdre Aoife High School is a comprehensive high school with 117 classroom teachers and a student population which breached 1,900 during the 2007-2008 academic year and peaked during 2009-2010 academic year. The Virginia On-Time Graduation Rate at the school for four-year cohorts were 74.2%, 86.7%, 80.0% and 82.6% in 2009, 2010, 2011, and 2012 respectively. The dropout rate calculated for four-year cohorts was reported as 10% in 2009, 6.5% in 2010, 13.7% in 2011, and 10.2% in 2012. According to the School Report Cards, the percentage of core classes taught by teachers not considered highly qualified according to the national definition established by No Child Left Behind decreased from 11% during the 2005-2006 academic year to 0% for the 2011-2012 academic year.
Taylor High School is a comprehensive high school with 113 classroom teachers and a student population which rose to just over 1,700 during the 2009-2010 academic year and declined to just below 1,500 during the 2011-2012 academic year. The Virginia On-Time Graduation Rate at the school for four-year cohorts were 77.2%, 81.8%, 79.4%, and 84.7 in 2009, 2010, 2011 and 2012 respectively. The dropout rate calculated for four-year cohorts was reported as 7.7% in 2009, 6.1% in 2010, 12.8% in 2011, and 6.2% in 2012. According to the School Report Cards, the percentage of core classes taught by teachers not considered highly qualified according to the national definition established by No Child Left Behind decreased from a high of 8% during the 2007-2008 academic year to 1% for the 2011-2012 academic year.

Osbourne High School is a comprehensive high school with 140 classroom teachers and a student population which breached 2000 during the 2007-2008 academic school year and hovered near that population until 2011-2012 when it dipped back down to 1,928. The Virginia On-Time Graduation Rate at the school for four-year cohorts were 80.5%, 85%, 82%, and 89.2% in 2009, 2010, 2011 and 2012 respectively. The dropout rate calculated for four-year cohorts was reported as 7.2% in 2009, 5.8% in 2010, 11.2% in 2011, and 5.7% in 2012. According to the School Report Cards, the percentage of core classes taught by teachers not considered highly qualified according to the national definition established by No Child Left Behind decreased from a high of 8% during the 2006-2007 academic year to 0% for the 2011-2012 academic year.

Data Collection Strategies
The participants for each case in this study are: the ITRT, the school principal, and teachers from the instructional staff. The secondary ITRT in this public school division are assigned on a per school basis.

**Interviews of school principals.**

Each principal was contacted individually to discuss selection of his or her school and participation in the study. The conversation described the importance of the study and what their involvement in the study would entail. They were sent a follow-up email to summarize the conversation and expectations concerning the research (Appendix A). After the initial consent was obtained, an appointment was scheduled for a day and time convenient for the participant. At the interview each principal was asked to sign a Principal School Consent form indicating their willingness to allow the study to be conducted on their high school site (Appendix B). The consent form explained that no identifiable data would be released at any time. At the beginning of each interview all participants were asked for permission to digitally record the interview which will be transcribed for analysis (Appendix C).

To determine the perceived role of the ITRT by school principals, the researcher used semi-structured guided interviews (Appendix D). McMillan and Schumaker (2006) suggest semi-structured guided interviews in order to frame questions ahead of time, but retain the ability to add questions or change the order of questions as the interview progresses. This increased the ability to explore the perceived role of the ITRT by the school leadership and allow the participant to expand or clarify answers as needed. The interview focused on personal beliefs about technology skills and student success, the school emphasis on technology integration, the perception of job duties of
the ITRT, and teacher expectations concerning technology integration. Each interview was conducted during after school hours to reduce any distraction the interview might have caused.

**ITRT data collection.**

The ITRT was contacted individually to discuss their selection for and participation in the study. The conversation described the importance of the study and what their involvement in the study would entail. An appointment was scheduled for a day and time convenient for the interview and shadowing. At the beginning of each interview, the participant was asked for permission to digitally record the interview, which was later transcribed for analysis (Appendix C).

To determine the self-perceived role of the ITRT the researcher used a semi-structured guided interview format (Appendix E). This increased the ability to explore the self-perceived role of the ITRT while allowing the participant to expand or clarify answers as needed. The interview focused on personal beliefs about technology skills and student success, the school emphasis on technology integration, the perception of job duties of the ITRT, and expectations for teachers concerning technology integration. Each interview was conducted during after school hours to reduce any distraction the interview might have caused.

A separate day was determined by each ITRT for a day of shadowing from the beginning of the work day until the end. The school day in this school district began at 8:45 and ended at 3:45. Parents at each high school received notification explaining the timeframe and purpose of the study (Appendix F). Digital images collected as a record of activities performed by the ITRT were captured by the researcher-observer.
using a digital camera. Images were captured at a rate of one every ten minutes. The images were taken in a photojournalistic style documenting with whom the ITRT was interacting and where the activity was taking place. Field notes recorded during the day included additional details about the activities. The date and time was obtained from the image file details. The images captured gave a visual representation of the range of activities performed by each ITRT. Mason (1996) pointed out, the nature of observation is to see what is actually happening in a location. Mason continued that the difficulty during observation is to determine “what to observe and what to be interested in” (p. 67).

The images were categorized in two ways. First each image was categorized according to the activity taking place as documented in the image and field notes. Second, each image was categorized according to the job description set forth by the school district. Shadowing the ITRT for a single day does not give the best representation of all tasks performed by the ITRT. However, the images, combined with interview data provided a better understanding of the role of the ITRT as perceived by the ITRT. This allowed for comparison of the tasks and job functions described during the interview to those observed and captured digitally during the day of shadowing.

Survey of staff.

To determine the perceived role of the ITRT by school staff, the researcher used an online survey (Appendix G). An online survey was the best method for collection of this data because it facilitated greater participation by school faculty. It was anticipated that teachers would be more likely to answer a brief online survey than they would be willing to complete and return a paper survey or participate in a face-to-face interview in
order to obtain the same information. Additionally, online rather than paper surveys were used to facilitate faster data collection and evaluation. Each faculty member was contacted through email to elicit participation in the short online survey (Appendix H). This email included a statement explaining the purpose of the study, an assurance that no identifiable data would be released at any time, and a link to the online survey in case that person elected to participate. Additionally, the online survey contained a preliminary declaration reaffirming the participant’s privacy and a statement informing each person that completion of the survey indicated consent to participate in the study.

There were two main purposes to the survey utilizing three different techniques. The two main purposes were to gain an understanding of how a school’s staff perceived the role of the ITRT and to gather data on how a school’s staff interacted around technology-related matters. The three techniques included identification of tasks, open-ended questions using metaphors, and social network analysis.

The survey listed multiple tasks related to technology, integration, and teaching tasks with which teachers may need help at various times of the year. These tasks were based on the roles, responsibilities, and guidelines established by the VA DOE. Additional tasks which are often performed by the ITRT but may not have related directly to roles established by the state or school division were also included. Each question asked who the participant would ask for help on a specified task as well as that person’s name and job title. This approach is similar to that taken by Burton et al. (2007) in the Virginia Tech study. The Virginia Tech study asked ITRT to rank twelve possible duties they might perform using a Likert-scale where 1 was almost never and 5 was very frequently. Indicating the job title of the person responsible for each task
allowed teachers to identify a person even if a name was not known and established one dimension of the ITRT role definition as perceived by teachers. This definition was compared to the role of the ITRT defined by the VA DOE and the school district and also the role of the ITRT perceived by the ITRT and principal in their respective surveys. This data enabled the researcher to conduct social network analysis illustrating the organizational relationships between tasks and individuals.

Honeycutt (2009) described how social network analysis could be used to illustrate the relationships between the interactions of individuals on a team. Schools function as teams where certain individuals are responsible for supporting others. If the role definition of a support person is not clearly understood or presented, using social network analysis will show where confusion lies and make it possible to target specific areas where clarification is needed. Honeycutt point out that a researcher “can compare SNA results with a program’s design . . . to assess how well the existing network matches the program’s intent. This comparison to an ‘ideal’ network can suggest ways the network could be improved” (p. 2).

A sociogram is a visual display of a network’s structure illustrating the link between initiators and responders (Honeycutt, 2009). “Initiators are individuals that report a relationship; receivers are targets” (p. 3). Initiators are the individuals responding on the surveys. Receivers are the individuals indicated for each task on the survey. In this study, sociograms will be created for each task being evaluated. If the role clarity surrounding a task is clear, the association of ties from initiators to receivers will approach 100%. The association percentage was calculated as a rate of based on
the number of times an individual was indicated for a task and the total possible times
the individual could have been indicated.

Also the surveys asked each participant to describe the role of the ITRT using a
metaphor. Shaw and Mahlios (2008) attribute the difficulty in studying teacher beliefs to
teachers’ “conflicting conceptualizations, lack of definitional clarity, and dissimilar
understandings” (p. 33). This conflicting conceptualization and lack of definitional clarity
is similar to the issues surrounding the role of the ITRT. “There is a growing body of
literature that supports the study and use of teachers’ metaphorical images in
understanding how they conceptualize their work and themselves in that work” (p. 32).
The Shaw and Mahlios study was looking for universal themes among metaphorical
interpretations by teachers and comparing dominant themes found in the literacy
metaphors and the teaching metaphors. The survey used in this research included an
open-ended question which asked teachers to complete a metaphor describing the
function of the ITRT at their school and to explain the rationale for the metaphor
created. The metaphors and explanations given were categorized and compared to
emerging patterns found through evaluation of the surveys relating to the perceptions of
the role of ITRT. The patterns from the metaphors and surveys were discussed as part
of the focus group discussion.

The final survey question asked teachers to indicate their interest in participating
in the focus group discussion by leaving their email address for future contact.

**Focus group discussions.**

To further explore the data and patterns which emerged from the interviews,
surveys, metaphors, and images, interested teachers were invited to participate in a
focus group discussion via a recruiting email. Only participants who indicated their willingness to participate during the online survey were contacted for the focus group (Appendix I). Each participant was asked to sign a consent form prior to the beginning of any discussion (Appendix J). The consent form included permission to digitally record the discussion for later transcription and explained that no identifiable data will be released at any time. The focus group discussion used a semi-structured interview format to guide the conversation (Appendix K). The discussion began with questions concerning the school’s emphasis on technology integration and ways that teachers are using technology. The final part of the discussion continued with questions concerning the role of the ITRT in helping teachers integrate technology.

The interview discussions were focused by comparing patterns from the interviews, online surveys, metaphors, sociographs, and digital images. The interview format allowed participants to explore patterns that emerged from all data and discuss implications related to the role of the ITRT.

Data Management and Analysis

The data collected during this study included interviews, surveys, and digital images. Each interview was digitally recorded using Audacity recording software. The principal, ITRT, and focus group interviews were transcribed by the researcher. The transcribed interviews were reviewed by the participant for accuracy and clarity. The participant was given an opportunity to clarify any discussion. As interviews were obtained, they were transcribed and reviewed for emerging patterns and themes. As patterns emerged, the transcribed interviews were coded to reflect instances of the patterns or themes.
The surveys were compiled and analyzed for each school using social network analysis to determine to whom teachers go for their various technology needs. The teacher survey results were evaluated to compare the ITRT job perception by teachers according to departments and years of experience. Further, the survey data was compared with patterns which emerged from the principal and ITRT interviews. The digital images were compared to the tasks identified during the interviews and surveys. They were classified as either ITRT tasks or non-tasks based on the ITRT role description from the *ITRT Handbook* and job description from the district. The patterns from the interviews, surveys and images were used to create the guided interview questions for the focus interviews. The focus interviews were transcribed and analyzed for patterns and themes. These were compared to patterns and themes from the interviews.

To ensure security of data and identifying information, all audio files from interviews and digital images from each day of shadowing were stored on a password protected hard drive. The activity logs and digital images were coded by a letter to represent the school during data analysis. All electronic files were erased after the completion of the study by reformatting the hard drive. Any hard copy data generated was destroyed.

**Data gathering across cases.**

Stake (2006) reports “The main activity of cross-case analysis is reading the case reports and applying their Findings of situated experience to the research questions of the Quintain” (p. 47). Stake further suggests that the cases be analyzed individually first rather than rushing to determine findings of the overall multi-case study.
Triangulation within cases.

It was anticipated that the data collected from interviews, surveys, and images would offer the desired triangulation to clarify the perceived role of the ITRT in each school. Stake (2006) explains that “Each important finding needs to have at least three (often more) confirmations and assurances that key meanings are not being overlooked. Each important interpretation needs assurance that it is supported by the data gathered and not easily misinterpreted by readers of the report” (p. 33). He further contends that “triangulation has been generally considered a process of using multiple perceptions to clarify meaning, but it is also verifying the repeatability of an observation or interpretation” (p. 37).

Cross-case analysis.

Stake (2006) stresses the importance of emphasizing the differences between cases. All collected data was analyzed within each school as a single case. After the final focus interviews were concluded and analyzed, the data was analyzed across cases for emerging themes and patterns. This provided the ability to draw similarities between cases while maintaining the uniqueness of each case in the study.

Limitations of Design

Several limitations in this study should be pointed out. First, this study was conducted solely in three secondary schools from this school division. This school division established integration of technology as part of their instructional mission and instituted a one-to-one computer initiative in the secondary schools. Since technology integration is the basis for the role of ITRT, the ITRT at this level may have been able to establish a clearly defined role with the administration and staff within his or her school.
These factors made the secondary school setting the most favorable environment for encouraging teachers to integrate technology.

Second, the researcher has been an ITRT in a different school in this particular school division for 7 years. The researcher’s prior knowledge of the various ITRT had the potential to influence data collection and interpretation of results. Therefore, all interview and survey questions were carefully worded to refrain from leading respondents to answer in any particular manner.
IV. Individual Cases

Case Study 1: Deidre Aoife High School

“You don’t want to integrate technology for technology’s sake” Mrs. Cassidy, ITRT.

Case setting.

Deirdre Aoife High School is a comprehensive high school with over 100 classroom teachers and a student population which peaked during the 2009-2010 academic year at 1,986 and has declined by approximately 130 students per year since then. The Virginia On-Time Graduation Rate at the school for four-year cohorts has ranged from a low of 74.2% in 2009 and a high of 86.7% in 2010. Since then the rate has not fallen below 80% (VA DOE, 2013). The school has made great strides in improvement of teacher quality since 2005. According to the School Report Cards presented by the VA DOE (2009, 2012), the percentage of core classes taught by teachers not considered highly qualified according to the national definition established by No Child Left Behind decreased from 11% during the 2005-2006 academic year to 0% beginning with the 2010-2011 academic year.

ITRT background.

Mrs. Cassidy, a 49 year old Caucasian woman who was born and raised in Central Virginia, had 16 years of educational experience at the time of her participation in this study. She obtained her Bachelor’s degree in English with a minor in Education. She also obtained a Master’s degree in Curriculum and Instruction. She spent 13 years
with careers in banking and insurance before deciding to teach. She taught primarily English at both the middle and high school levels. After 12 years in the classroom she moved into the Instructional Technology Resource Teacher position. She was transferred into her currently school only four months prior to the current research.

Mrs. Cassidy sought the opportunity to become an ITRT after her experience in a pilot program involving Promethean ActivBoards when she discovered her interest in technology expanded beyond her own subject area.

I enjoy technology, and had a good bit of experience with it in the business world. Technology was always a strong interest for me in the classroom as well, so I decided to obtain my MA in curriculum and instruction with a technology focus. After I was part of the pilot program for Promethean, I realized that my interest in technology went beyond just my content area.

Helping teachers become better teachers through integration of technology is a main focus for Mrs. Cassidy.

**Principal background.**

Mr. O’Conner is a 25 year veteran of education and is currently the principal of Deirdre Aoife High School. He is an African-American who moved into administrative positions after 14 years in the classroom and has been principal at Deirdre Aoife High School for three years.

**Staff background.**

Both the Principal and ITRT classify the staff as average when considering overall technology use. Mrs. Cassidy states, “probably close to 55 – 60% of my faculty is the average user” and Mr. O’Conner likewise affirms “we’re an average school.”
staff at Deidre Aoife High School were invited to participate in an online survey concerning the role of the ITRT related to several technology related matters (Appendix H). Out of 117 classroom teachers invited to participate, 23% completed the survey. The teacher respondents represented a broad spectrum of departments in the school including: Career and Technical Education, Fine Arts, Language Arts, Library/Media Center, Mathematics, Science, Social Studies, School Counseling, and World Language.

Figure 1. Respondents at Deidre Aoife High School breakdown by content area.

Distribution of respondents according to years of experience in education was similarly distributed: 0-5 years, 23%; 6-10 years, 31%; 11-15 years, 12%; 16-20 years,
8%; 21 or more years, 27%. Of the respondents, 86% were female and 14% were male.

Figure 2. Respondents at Deidre Aoife High School breakdown by years of experience.

*Setting the stage.*

Principal O’Conner describes the long-term desire for students as one where they become effective communicators and proficient users of basic productivity tools when they graduate. To support this goal, at the beginning of the year, Principal O’Conner sets forth the expectations that teachers will embed technology daily into lessons, continuously move toward student centered teaching and create high quality lessons based on the high quality 21st Century lesson rubric utilized in District 9. Based on walk-through and classroom observations, Principal O’Conner believes the teachers
at Deirdre Aoife High School fall all along a continuum as far as skill with technology integration and they are working to become better. Principal O’Conner states,

We want teachers to shift instruction so it is more student–centered. And so, through our evaluations, through our training, our expectation is that this shift is continuously occurring. So, as [administrators] go into the classrooms [to conduct observations] we are measuring where we are with that class.

According to Mrs. Cassidy, these expectations are directly related to what the principal has determined as the objective on the Continuous School Improvement Plan. Additionally Mrs. Cassidy explains that there is an expectation for teachers to implement high quality 21st Century lessons and projects and participate in a division-wide judging and award ceremony. The division-wide judging and award ceremony centers on a 21st Century lesson plan rubric. Teachers at Deirdre Aoife High School are encouraged to integrate technology through conversations with the ITRT centered around the lesson plan rubric and 21st Century instructional strategies. Digital images document how Mrs. Cassidy works one-on-one with teachers using the rubric to collaboratively develop lesson plans. In Figure 3, Mrs. Cassidy works with a teacher to begin development of a lesson to be submitted to the division-wide judging and award ceremony.
Principal O’Conner asserts that Mrs. Cassidy is a resource for the school. She helps teachers move along a continuum integrating 21st Century teaching strategies based on the high quality 21st Century lesson rubric. “That is pretty much the main goal for our ITRT, to help staff to move from where they are to . . . the next level.” Mrs. Cassidy provides opportunities for the staff to utilize her expertise through lesson planning, co-teaching, and ongoing training. The school administration supports the efforts of Mrs. Cassidy to increase technology integration and high quality 21st Century lessons by providing time during faculty meetings to introduce new software. This exposure helps teachers identify and learn new tools that will help them continue to progress up the continuum.

What we do is make sure we train staff on what we expect, give them an opportunity to understand what is available, show the value for which it can impact the classroom instruction. Then beyond that it should be a lot easier for staff to utilize what is available because then they understand. For example at our last faculty meeting we did ActivEngage training. And so now staff know,
‘There is one more resource that I have for which I can utilize technology in the classroom.’

**Training and professional development.**

The teacher surveys showed that a high number of the staff at Deidre Aoife High School associated the ITRT with types of training (Web 2.0 SNA association = 68%, software SNA association = 63.3%) and planning technology-integrated lessons (SNA association = 60%).

![Social network analysis for training Web 2.0 at Deidre Aoife High School.](http://nodexl.codeplex.com)

Figure 4. Social network analysis for training Web 2.0 at Deidre Aoife High School.
Figure 5. Social network analysis for training software at Deidre Aoife High School.
Language Arts teachers show a high degree of consistency related to association of the ITRT with tasks that support instruction. Five of the six Language Arts teachers who responded associate the ITRT with each of the training and professional development tasks. Even when considering who to approach for assistance with locating web resources to support instruction, the staff more often associated this task with the librarians (SNA association = 37.5%); however, the Language Arts teachers primarily identified the ITRT (SNA association = 71.4%). Teacher comments from the focus group discussion support these trends. “She’ll come in, she’ll help you either
behind the scenes or she'll come in the class.” “She also gives you new ideas and hints. She reviews lessons for us and she makes suggestions and she’s really been a strong force with that.” “I am a department chair at my school. She helped me set up training for my staff using technology.” “She asks us what kind of training we want, we tell her and she does it.”

Comments from interviews with Mrs. Cassidy and Principal O’Conner both reveal a high degree of focus on training. Mr. O’Conner confirmed that his staff is expected to integrate technology and move toward more student-centered instruction.

[We] can have an expectation [for technology integration], but without an understanding of how to utilize technology then it’s just going to be an expectation with nobody actually moving toward it. So what we do is make sure we train staff on what we expect. Give them an opportunity to understand what is available. Show the value for which it can impact the classroom instruction and then beyond that it should be a lot easier for staff to utilize what is available because then they understand.

Mrs. Cassidy describes her work on the campus as having three foci. The first focus is directly working with teachers. This work takes the form of planning lessons or giving feedback concerning the level of innovative technology integration and also working with new teachers. Additionally, Mrs. Cassidy finds she is sometimes asked to return to classrooms to observe teachers implementing lessons they created and to provide feedback or support. The second focus is going into classes specifically teaching students technology skills required to complete the high quality 21st Century lessons and projects teachers develop. Figure 7 shows Mrs. Cassidy teaching students
specific technology skills and modeling the use of 21st Century instructional strategies that the teacher can continue to incorporate into lessons. The image shows Mrs. Cassidy acting as a facilitator, assisting students when necessary rather than leading the lesson step by step.

Figure 7. Mrs. Cassidy modeling instructional technology.

The third focus is technology instruction for staff. Mrs. Cassidy helps teachers move along the continuum for increased integration of 21st Century teaching strategies by providing opportunities for the staff through ongoing training, co-teaching, and lesson planning as well as using faculty meetings as a venue to expose teachers to new tools that will help them progress. She spoke to the fact that teachers were very accepting of the opportunities provided for training and professional growth.

It didn’t seem to be a hardship because there was plenty of time allowed for it. Requiring that teachers come and meet with the ITRT one-on-one and then let them plan a lesson and grow one-at-a-time and give them some assistance. These comments support the idea that the ITRT role is recognized by stakeholders at Deidre Aoife High School as pivotal for providing essential professional
development and training. This focus helps teachers embed technology daily into lessons, move toward student centered teaching, and create high quality lessons.

*Photojournalistic observations.*

While not every aspect of the job description was displayed during the on-site observation, the data does show some similarity to patterns emerging from the interviews and surveys. In this case, the image data revealed that Mrs. Cassidy most often acted in a training capacity (50%) followed by modeling in classrooms (31%). The fact that “training” was the highest observed activity aligns with data from the surveys and interviews. Interestingly, the second highest association of tasks from the survey data is the lowest observed task during this day of observation. Mrs. Cassidy was observed creating integrated lesson plans for only 2% of the day. All observed activities were classified as ITRT tasks identified through interviews and surveys.
The largest percentage of Mrs. Cassidy’s observed activities were devoted to aspects of providing training for teachers. This finding is confirmed as a consistent role for Mrs. Cassidy through survey data, interviews, and images collected. One explanation provided during the focus group discussion explained, “She also gives you new ideas and hints. She’s done several presentations at our staff meetings about technology.” Figure 9 illustrates an instance of training related activities documented during the observation. Field notes reveal that Mrs. Cassidy was preparing for an afternoon faculty meeting and training session. She was ensuring her directions were correct and making adjustments as needed.
On this day, Mrs. Cassidy also modeled strategies in classrooms for a substantial portion of the day (31%). Figure 10 documents Mrs. Cassidy modeling how the use of annotation using the Adobe Acrobat software can be used instructionally in a classroom. Field notes reveal this activity as part of a larger project on which she worked with the English content specialist.

During the observation Mrs. Cassidy also served as a technology resource for teachers and staff (17%). Metaphor explanation from the survey supports this finding.
“She provides needed assistance to everyone on campus from the principals and vice principals to the students.”

Where the survey data counts integrated lesson planning as a top focus for this ITRT, the evidence from this day of observation shows that as the least of the observed events (2%). Mrs. Cassidy’s perceived role with three foci aligns directly with the activities observed during this observation period. Creating learning resources and researching or recommending software was not part of Mrs. Cassidy’s observed activities. Working with district specialists was not directly observed, however, her work in classrooms blended with her work with the content specialist.

**Overall impressions.**

The teacher surveys also included a component for respondents to describe Mrs. Cassidy in metaphoric terms and explain or clarify those descriptions. These metaphors were mostly positive (52%) in description; however, some staff expressed their descriptions negatively (29%), while others were neutral (19%).
Figure 11. Positive, negative and neutral metaphors at Deidre Aoife High School.

Language Arts teachers were overwhelmingly positive. One Language Arts teacher compared Mrs. Cassidy to the breeze. “The breeze encourages new and healthy regrowth by removing some of the old, tired ideas.” Another compared her to an electrical power source. “Each staff member plugs into the source for a variety of energy needs. When fully charged they can disconnect. When they need a power boost, they hook up again.” The positive metaphors from all content areas seemed to associate Mrs. Cassidy with natural metaphors. Other teachers related Mrs. Cassidy to “the water that nourishes the tree,” “fertilizer that promotes growth,” and “a tree with many branches growing and extending self beyond the call to duty.”
Social Studies teachers were more negative. Two Social Studies teachers compared Mrs. Cassidy to small animals, a squirrel and a hummingbird. Both metaphors reflected the perception of the ITRT as being unable to perform her job effectively. “A lot of movement but not a lot accomplished,” and “gather a lot of information and store it, but do not readily share their nuts with others.” Other negative metaphors from various content areas seemed to reflect an inability to obtain help as relayed in the statements “hard to pin down for individual help” and “does not provide new or innovative ideas - mostly supporting people who don't use technology.”

**Disconnect does exist.**

While most teachers associate the ITRT with roles laid out in the *ITRT Handbook*, it appears that one content area does not consistently associate Mrs. Cassidy with those roles. The Social Studies department is more likely to seek assistance with training and planning technology-integrated lessons from other teachers or the content specialist (SNA association = 80%). Interestingly, all of the respondents from the Social Studies content area had 10 or fewer years of experience in education, only one Social Studies teacher had five or fewer years of experience. Another pattern emerged among all respondents with educational experience between six and ten years. These teachers were split between associating the ITRT or another teacher as the primary resource for training and “planning technology-integrated lessons” more often than any other level experience. Overall teachers at Deidre Aoife High School associated the ITRT with planning integrated lessons at a rate of 60%. The figure illustrates the pattern for less experienced teachers to more often associate with other teachers when planning integrated lessons. For teachers with less than five years of
experience, 25% associate integrated planning with the ITRT leaving 75% to find other sources. Likewise, teachers with educational experience between six and ten years associated the ITRT with planning integrated lessons at a rate of 28.6%.

Figure 12. SNA with years of experience and planning lessons.

The staff was also surveyed concerning the ITRT role for some aspects of troubleshooting as well as assistance when using data to plan lessons. Figure 13 shows that when the staff was surveyed concerning more technical issues, the ITRT falls as the main association for help, however, there is a disconnect with a portion of the staff. When asked who teachers would go to for help troubleshooting error messages on the computer, association discovered through social network analysis
indicated that the ITRT was their primary source for troubleshooting (28.6%). There was no distinct pattern for this association within years of experience or content area.

Figure 13. Social network analysis for troubleshooting at Deidre Aoife High School.

When asked who teachers would go to for help installing software, 88% of respondents indicated that the TST was their primary source for assistance, only 12% indicating an association with the ITRT for this task. This shows a definite delineation between what is recognized as instructional support and technical support and the role of the ITRT concerning technical support.
Principal O’Connor and Mrs. Cassidy indicated that the ITRT role included problem solving with teachers concerning various aspects of teacher computers. During the interview with Mrs. Cassidy she reveals her frustration when dealing with some technical support issues, especially “back-end technology support such as creating groups in [the county Learning Management System].” This data shows that many staff members do not recognize the distinction between the instructional and technical positions, including the ITRT herself, though some technical support is clearly recognized as outside of the role of the ITRT. The disconnect concerning the role of the
ITRT leads to frustration by teachers as noted in the focus group discussion, “[Troubleshooting] takes away from her helping teachers use technology in the classroom” However, some teachers appreciate her willingness to help as expressed in one teacher’s explanation, “[Mrs. Cassidy does] all she can to assist everyone at all times.”

Principal O’Connor expressly pointed to the ITRT for assistance and guidance when using data from assessments to plan student activities. Comments by Mrs. Cassidy touched on this notion during the interview when discussing lesson planning with teachers. “Often I try to balance [training students] out with ‘How are we going to integrate it’ and ‘Let’s talk about the lesson you are going to do’” putting the focus of the lesson back on the content being taught rather than a lesson in using a specific software. From the teacher survey, social network analysis showed teachers associate the ITRT with using data to plan student activities at a lower association (22.7%), relying more often on other colleagues.
Figure 15. Social network analysis using data to plan instruction at Deidre Aoife High School.

This data shows that there is still some disconnect concerning the role of the IRT at Deidre Aoife High School. Until her role concerning instructional assistance with training is made clear with teachers in all content areas, stakeholders will continue to experience various levels of frustration and discontent with the performance of the IRT.

Case Study 2: Taylor High School
“I think that a lot of teachers are using more technology than they have in the past” Mrs. Lewis, ITRT.

**Case setting.**

Taylor High School is a comprehensive high school with over 100 classroom teachers and a student population which peaked during the 2009-2010 academic year at 1,711 and has declined by approximately 120 students per year since then. The Virginia On-Time Graduation Rate at the school for four-year cohorts has ranged from a low of 77.2% in 2009 and a high of 84.7% in 2012 (VA DOE, 2013). The school has made great strides in improvement of teacher quality since 2008. According to the School Report Cards presented by the VA DOE (2009, 2012), the percentage of core classes taught by teachers not considered highly qualified according to the national definition established by No Child Left Behind decreased from 8% during the 2007-2008 academic year to 1% with the 2011-2012 academic year.

**ITRT background.**

Mrs. Lewis, a 40-year-old Caucasian woman who was born in Illinois, had 16 years of educational experience at the time of her participation in this study. She also lived in Michigan and New Jersey before her family settled in Wisconsin for her high school years. She obtained Bachelor’s degrees in Mathematics, Education, and Psychology. She spent six years teaching various math courses at the high school level then a job opportunity for her husband became available in Virginia. Having just completed a Master’s degree in Instructional Technology, she was interested in the one-to-one laptop initiative in District 9.
I saw they were hiring several technology trainers and this seemed like the perfect fit for the Instructional Technology program I was just completing with my Masters. I really enjoy working with the school faculty and being able to teach both teachers and students.

She became an Instructional Technology Resource Teacher in District 9 where she has remained for 10 years, eight years at Taylor High School. Her goal is to help teachers “grow in their instructional technology knowledge, use, and implementation in the classroom.”

**Principal background.**

Mrs. Moore is a 25 year veteran of education and at the time of the study was principal of Taylor High School. She is a Caucasian female, who began her public education career in Pennsylvania and has added college level instruction during her many years in the profession. She has been an administrator for 14 years and served for nine years as the principal of Taylor High School. In 2012 she took on the challenge of becoming the principal of a different secondary high school within District 9.

**Staff background.**

Both the Principal and the ITRT classify the staff as average to above average users of technology. Mrs. Lewis states, “a lot of teachers are using more technology than they have in the past. There is more discussion around technology. [Teachers] are more encouraged to use it.” Mrs. Moore supports the “above average” classification of the school staff and the increase of technology integration. “I feel that we are far, far ahead of where we were several years ago. We have seen gradual growth and we have tracked that growth with teachers and students.” The staff at Taylor High School
was invited to participate in an online survey concerning the role of the ITRT related to several technology related matters (Appendix H). Out of 113 classroom teachers invited to participate, 19% completed the survey. The teacher respondents represented a broad spectrum of departments in the school including: Career and Technical Education, Fine Arts, Mathematics, Science, Social Studies, and World Language.

![Figure 16. Respondents at Taylor High School breakdown by content area.]

Distribution of respondents according to years of experience in education was similarly distributed: 0-5 years, 18%; 6-10 years, 23%; 11-15 years, 9%; 16-20 years, 9%; 21 or more years, 41%. Of the respondents, 64% were female and 36% were male.
Setting the stage.

Principal Moore describes the long-term goal for students as attaining the ability to research effectively and write proficiently. To support this goal, Principal Moore sets a daily expectation for technology use in the classroom in a variety of activities. The expectations are directly related to the strategic plan for District 9, the superintendent’s expectations, and the Continuous School Improvement Plan. Principal Moore states that she keeps her fingers on the pulse of what’s going on from talking to teachers and our librarians, I know what it is that they are doing. I tell the Leadership team to invite me in to classes when [those skills are] being taught.
Based on walk-through data and classroom observations, Principal Moore believes the teachers at Taylor High School have increased their use of technology in the classroom. According to Mrs. Lewis, teachers at Taylor High School are encouraged to integrate more technology through increased discussion around the use of technology and the expectation of participation in the division-wide judging and award ceremony centered on a 21st Century lesson plan rubric. In figure 18 Mrs. Lewis works one-on-one with a teacher to understand the instructional value and 21st Century skills associated with use of available web conferencing software as well as specific training on use of the software.

Figure 18. Mrs. Lewis as technology resource.

Principal Moore emphasizes that Mrs. Lewis is a constant resource for the school. She exposes the staff to various 21st Century tools and strategies and is always there to help teachers in the classroom, in one-on-one sessions and in group settings.
We couldn’t move ahead without the ITRT. She is the one who teaches us how to do things. She doesn’t only teach the teachers, she goes into classrooms and teaches entire rooms to do things with the teacher learning along.

The school administration supports the efforts of Mrs. Lewis by allowing her the freedom and flexibility to offer training to the staff in a variety of formats. Mrs. Lewis meets the needs of the staff by providing opportunities for learning through lesson planning, co-teaching, and ongoing training during planning periods and department meetings.

*Training and professional development.*

The teacher surveys showed that a high number of the staff at Taylor High School associate the ITRT with types of training (software SNA association = 88.9%, Web 2.0 SNA association = 85.7%), planning technology-integrated lessons (SNA association = 52.9%) and using data to plan lessons (SNA association = 61.5%).
Figure 19. Social network analysis for training software at Taylor High School.
Figure 20. Social network analysis for training Web 2.0 at Taylor High School.
Figure 21. Social network analysis for planning integrated lessons at Taylor High School.
Social Studies teachers show a high degree of consistency related to association of the ITRT with tasks that support instruction. Of the six Social Studies teachers who responded, only one Social Studies teacher selected a different source for one indicator related to training and professional development tasks – learning Web 2.0 tools. Additionally, the Social Studies department was 100% consistent with its association of the ITRT with planning lessons. Teacher comments from the focus interview support the trends of association with the ITRT while the association shown in social network analysis was not as consistent at 52.9%.
The ITRT will give some type of training. And then, throughout the year if you need help with different things, she will offer to see you during your planning period. This year she helped me out a lot with the web quests.

Comments from interviews with Mrs. Lewis and Principal Moore both reveal a high degree of focus on training and confirm that the staff is expected to integrate technology daily. Mrs. Lewis explained:

I'll offer training during planning periods that they can come in anytime throughout the two days. I'll offer training during the staff development days. I offer a lot during summer and right after the teachers are off in June, we offer a lot of training that last week or right after they come back. And then during the year, a good majority of the training is one-on-one or two, myself and one or two people.

Principal Moore described how Mrs. Lewis helps teachers through training opportunities to increase technology integration and meet the school expectation.

[Mrs. Lewis] trains entire departments at department meetings. We have had [training] meetings through the years. We did technology meetings where [the teachers] would get together as a department and tell her what they wanted to do and she would train them and then they would create lessons. The expectation [for technology use] is daily. [Teachers] need to have a variety of activities every day. We have seen a huge increase in the teachers using the laptops and the kids using them every day and our walk through data shows that.

Mrs. Lewis references most tasks she does in relation to training staff and students at Taylor High School. She offers numerous sessions for teachers to learn
software, she is asked to model lessons or co-teach in classrooms when her knowledge of the technology tools is higher than that of the teacher and she assists teachers with technical tasks such as retrieving footage from video cameras. Only once is there a mention of lesson planning with teachers relating the high quality 21st Century lesson rubric utilized in District 9. When Mrs. Lewis does talk about this planning opportunity, she described it as a coaching opportunity to help the teacher focus on the content of the lesson rather than simply layering technology on top of the lesson.

I was just working with [a teacher who] wanted to have her students do some blogging and communicate with another school through Elluminate and so I asked her some questions about the lesson and what it was she wanted students to learn and how she was going to assess that. I tried to bring it back to the content piece, the focus of the lesson being on what they were learning versus that they would do some blogging.

Figure 23 shows Mrs. Lewis facilitating a lesson with students on the use of an SAT online preparation resource. She models effective facilitation of the resource for the teacher while assisting students. Rather than a step by step lesson, led from the front of the room, the ITRT gives instruction then monitors student progress and offers aid when needed.
Figure 23. Mrs. Lewis modeling instructional techniques.

Comments from interviews and surveys support the idea that the ITRT role is recognized by stakeholders at Taylor High School as pivotal for providing professional development and training. A teacher commented that “her focus is to help teachers.” The training opportunities help teachers reach the school-wide goal to integrate technology daily into lessons as recognized by the principal, “She trains [teachers] and they [work together to] create lessons.”

Photojournalistic observations.

While not every aspect of the job description was displayed during the on-site observation, the data does show some similarity to patterns emerging from the interviews and surveys. In this case, the image data revealed Mrs. Lewis most often acted in a training capacity (40%), followed by modeling instructional strategies as she worked with students (30%) and serving as a technology resource (25%). However, where survey data indicates integrated lesson planning is a top focus for Mrs. Lewis, the evidence from this day of observation shows that aspect as one of the least of the observed roles (2%). Creating learning resources was also a low observed activity
(2%). Collaborating with district personnel and researching or recommending software was not part of the activities recorded during the observation. All observed activities were classified as ITRT tasks verified through interviews and surveys.

![Pie chart](image)

**Figure 24. Daily Activities at Taylor High School.**

The largest percentage of Mrs. Lewis’s observed activities were related to providing training for teachers. This finding is confirmed as a consistent role for Mrs. Lewis through survey data, interviews, and images collected. One teacher remarked, “I will go to her but she will offer different sessions throughout the year to help us out with a number of things.” Figure 25 illustrates an instance of training related activities documented during the observation. Field notes indicate Mrs. Lewis was working with a new teacher, offering her training on essentials for teachers in District 9 including using the learning management system as well as the grading and attendance programs.
On this day, Mrs. Lewis modeled strategies in classrooms for a substantial portion of the day (30%). Figure 26 shows Mrs. Lewis in a classroom with student modeling the use of Web 2.0 resources for SAT preparation. Field notes reveal this activity as part of a larger project district-wide with which the ITRT was involved.

During the observation Mrs. Lewis also served as a technology resource for teachers and staff (25%). She is identified as “the go to person” and “A resource that we all count on to be able to answer those questions no one else can.” Figure 27 shows...
that the ITRT spends time responding to individual emails with answers to instructional questions.

Figure 27. Mrs. Lewis as technology resource.

Where the survey data counts integrated lesson planning as a top focus for this ITRT, the evidence from this day of observation shows that role as one of the least of the observed events along with creating learning resources. During this observation period, researching or recommending software was not part of Mrs. Lewis’s activities. Working on district-wide projects with specialists was not directly observed, however, her observed work in classrooms blended with district-wide projects supported by specialists.

**Overall impressions.**

The teacher surveys also included a component for respondents to describe Mrs. Lewis in metaphoric terms and explain or clarify those descriptions. These metaphors were mostly positive (64%) in description; however, some staff expressed their descriptions negatively (21%), while other descriptions were neutral (14%).
Figure 28. Positive, negative and neutral metaphors at Taylor High School.

Most positive metaphors from all content areas seemed to associate Mrs. Lewis with natural metaphors relating to movement or growth. Teachers related Mrs. Lewis to “the water that sustains life,” “new growth reaching for the sun,” and “the tree that keeps the photosynthetic (living, growing) process going.” One math teacher compared Mrs. Lewis to a river. “Her knowledge is deep as she winds her way through the maze of technology. Her currents vary depending on timetables and people she needs to help.” Another compared her to “the sap which feeds all parts of the tree. A resource that we all count on to be able to answer those questions no one else can.”

The negative metaphors seemed to reflect an inability to obtain help as related in the statement, the ITRT is a “Moving Target - at school as often as away at some
meeting,” and that the ITRT “gets the work done she needs to get done, but is not a source of new ideas.” Another wrote

The school is a racetrack: the teachers are the pit crew and the administrators and ITRTs are the cars. The crew must wait for the cars to come in for a check to really get their attention, but their time is short as they must be off to the next pit stop.

There was no content area which left a larger percentage of negative comments than any other content area.

Disconnect does exist.

Overall teachers associate the ITRT with most of the roles laid out in the ITRT Handbook. However, it appears that half of respondents do not consistently associate Mrs. Lewis with “planning technology-integrated lessons.” Teacher responses indicate that each content area, other than the Social Studies department (Figure 21), is divided between seeking assistance from the ITRT or seeking assistance from librarians and other teachers.

A pattern also emerges when responses are examined by years of experience. New teachers, those with five or fewer years of experience associate the ITRT only with “learning to use software.” New staff members associate planning technology-integrated lessons with other teachers. On the opposite spectrum, teachers with eleven or more years’ experience overwhelmingly associate the ITRT with “planning technology-integrated lessons.” Figure 29 illustrates those associations.
The staff was also surveyed concerning the ITRT role for some aspects of troubleshooting as well as assistance when using data to plan lessons. When the staff was surveyed concerning more technical issues, the ITRT falls as the main association for help, however, there is disconnect with a portion of the staff. Figure 30 shows that when asked who teachers would go to for help troubleshooting error messages on the computer, the rate of respondents who indicated the ITRT was their primary source for troubleshooting was 44%. A closer examination of the social network analysis for teachers with fewer than five years of experience shows a much larger association of the ITRT at 66%.
Figure 30. Social network analysis for troubleshooting at Taylor High School.

However, when asked who teachers would go to for help installing software, the ITRT completely disappears as a response. All respondents (SNA association = 100%) indicated that the TST was the primary source for assistance with that point. This shows a definite separation between what is recognized as instructional support and technical support and the role of the ITRT concerning technical support.
Figure 31. Social network analysis for installing software at Taylor High School.

The *ITRT Handbook* clearly makes the ITRT role as a supporter of instruction separate from technical support. Taylor High School seems to have made that distinction clear with most staff. However, in her interview Mrs. Lewis does reveal her frustration concerning some of the troubleshooting with which teachers expect her help.

Some of the troubleshooting I don’t feel comfortable with because I don’t know what every error message means, but teachers will come to me for pretty much anything that has to do with their computers. And a lot of time they just don’t know if it is me or the TST’s responsibility.
This data shows that most of the staff members at Taylor High School do recognize the distinction between the instructional and technical positions, even though that perception through the eyes of the ITRT may be different.

Staff at Taylor High School is divided concerning approaching the ITRT for assistance and guidance when using data from assessments to plan student activities. The interviews with Mrs. Lewis, Mrs. Moore, and the focus interview did not reveal that creating lessons using data was a focus for the ITRT at Taylor High School. That the survey data would show just over half of the staff identifying the ITRT as a primary source (61.5%) indicates a disconnect between established school roles and ITRT roles laid out in the State Handbook.
Figure 32. Social network analysis for using data to plan instruction at Taylor High School.

This data shows that, for the most part, the role of the ITRT at Taylor High School is clear. There are small portions of the staff that need further clarification; however, most stakeholders understand the appropriate roles and tasks with which to approach the ITRT.

**Case Study 3: Osbourne High School**

“I think this job is very important, very integral to incorporating technology for Twenty-first century lessons” Mr. Cox, ITRT.

**Case setting.**

Osbourne High School is a comprehensive high school with over 140 classroom teachers and a student population which peaked during the 2009-2010 academic year at 2,072 and has declined by approximately 70 students per year since then. The Virginia On-Time Graduation Rate at the school for four-year cohorts has ranged from a low of 80.5% in 2009 to a high of 89.2% in 2012 (VA DOE, 2013). The school has made great strides in improvement of teacher quality since 2005. According to the School Report Cards presented by the VA DOE (2009, 2012), the percentage of core classes taught by teachers not considered highly qualified according to the national definition established by No Child Left Behind decreased from 8% during the 2005-2006 academic year to 0% with the 2011-2012 academic year.

**ITRT background.**

Mr. Cox, a 40-year-old Caucasian male who was born in Virginia, had 8 years of educational experience at the time of his participation in this study. He obtained his
Bachelor’s degrees in History and Journalism/Photography. He spent 10 years as a journalist in print, radio, television, and internet before deciding to teach. He received his teaching certification through a university in Virginia, and then he taught U.S. History and Government at the high school level. During his classroom experience, Mr. Cox found that he was always a resource for his fellow teachers to help integrate technology in their classrooms. Additionally his skills created opportunities for him to lead professional development sessions for the staff at his school. After six years in the classroom he moved into the Instructional Technology Resource Teacher position at Osbourne High School. His desire is to help teachers grow and become better educators through 21st Century instructional practices. He believes

[Students] learn through experiences. And [students] should be doing more learning out in the field with more performance-based outcomes that really show their mastery of a concept [so students can] leave school with the training they need to be good citizens and leaders.

Inspiring teachers to become better educators through integration of 21st Century instructional practices is a main focus for Mr. Cox.

**Principal background.**

Mrs. Tamley is a 16 year veteran of education and is currently the principal of Osbourne High School. She is a Caucasian female and has been an administrator for 10 years, serving for all of those years at Osbourne High School.

**Staff background.**

Both the Principal and ITRT classify the staff as above average when considering overall technology use. Mrs. Tamley states, “I have a creative staff, an innovative staff,
a willing staff, a young staff, a fearless staff in many cases, that are willing to use
technology. I think that willingness makes us a leader.” Mr. O’Conner likewise affirms “I
see a lot of people willing to use it. I get a lot of people asking for help.” The staff at
Osbourne High School was invited to participate in an online survey concerning the role
of the ITRT related to several technology related matters (Appendix H). Out of 140
classroom teachers invited to participate, 16% completed the survey. The teacher
respondents represented a broad spectrum of departments in the school including:
Career and Technical Education, Exceptional Education, Fine Arts, Health and Physical

Figure 33. Respondents at Cox High School breakdown by content area.
Distribution of respondents according to years of experience in education was similarly distributed: 0-5 years, 30%; 6-10 years, 35%; 11-15 years, 13%; 16-20 years, 13%; 21 or more years, 9%. Of the respondents, 74% were female and 26% were male.

Figure 34. Respondents at Cox High School breakdown by years of experience.

**Setting the stage.**

Principal Tamley describes the long-term desire for students as one where, by the time they graduate, students become effective researchers and proficient users of basic productivity tools. To support this goal, at the beginning of the year, Principal Tamley sets forth the expectations that teachers will use technology where it fits best in a lesson. Principal Tamley states:
My expectation is they use it as an appropriate tool. If it’s a lesson that technology would enhance then they should use technology to enhance the lesson. There are sometimes when technology is not the best tool for the lesson, and that is OK. I may go into a lab and there may not be an appropriate use of technology or there may be some “-ometer” of some sort that they are supposed to be using for the lab that would make it a better lab. So it just depends. The expectation is that they use it when it is appropriate.

Principal Tamley believes the teachers at Osbourne High School have an understanding of the expectations for integration based on activities and conversations with teachers at the beginning of the year and through department discussions of notes from leadership meetings. According to Mr. Cox, the expectations are directly related to the Superintendent’s expectation for 80% technology usage in the classroom and the division-wide judging and award ceremony centered on 21st Century instruction. Principal Tamley asserts that Mr. Cox is a resource for the school by helping teachers with training and troubleshooting both management and teaching tools. Figure 35 shows Mr. Cox working with a staff member one-on-one. This image captures the staff understanding and willingness to learn the necessary 21st Century skills in order to meet school and district expectations for technology integration.
Figure 35. Mr. Cox training one-on-one.

*Training and professional development.*

The teacher surveys showed that a high number of the staff at Osbourne High School associated the ITRT with types of training followed closely by planning technology-integrated lessons. Figure 36 illustrates the associations revealed by social network analysis for training on Web 2.0 resources (SNA association = 88.2%). Figure 37 shows that teachers also see the ITRT as the go-to person for training on software (SNA association = 80%). Lastly, Figure 38 indicates the association of the ITRT with planning technology integrated lessons (SNA association = 66.7%).
Figure 36. Social network analysis for training Web 2.0 resources at Osbourne High School.
Figure 37. Social network analysis for training software at Osbourne High School.
Across the board, the teachers show a high degree of consistency related to association of the ITRT with tasks that support instruction, especially training. Comments from interviews with Mr. Cox and Principal Tamley both reveal a high degree of focus on training. Mrs. Tamley confirmed that the ITRT provides relevant training that teachers need for productivity as well as instruction.

There are real basic [trainings] from the management tools, like eClass, WinSchool, and SchoolSpace. And then there are other basics now that weren't
basics, like Discovery Education. And then anytime there is anything new that comes along, especially with the Promethean things, we are really pushing to get a broader usage of Promethean tools.

When planning integrated lessons the responses indicated a high association of this task with the ITRT. Comments from the online teacher survey support this association. “He is able to assist teachers in all aspects of classroom activities from basic grading and attendance, to advanced web-based lessons and assessments.”

Mr. Cox’s descriptions of his work fall into three separate categories. The first category is one where he works directly with teachers to plan technology-laced, integrated lessons. The second category is working with students by going into classes, specifically teaching technology skills, or working one-on-one as needed to assist students when utilizing technology for projects assigned by teachers. Figure 39 captures Mr. Cox being approached by a student between classes with questions concerning an assigned project. Field notes further revealed that Mr. Cox took the time to listen to the student, give tips and troubleshooting advice as well as establish a time when he would be available for help that would better suit her time constraints since she was asking him for help during her walk to her next class.
The third category is technology instruction for staff. Mr. Cox helps teachers move along the continuum for increased integration of 21st Century teaching strategies by providing opportunities for the staff to learn new tools. He offers this learning through ongoing training and co-teaching, department meetings, and a technology newsletter. The multiple venues provide an opportunity to expose teachers to new tools that will help them progress in their choice of a format that will meet their needs. He spoke to the fact that teachers at his school have been flooded with additional expectations. He tries to introduce training in small bits so that teachers are more accepting of the opportunities provided for training and professional growth.

I created a template in Publisher for a newsletter and started creating one every couple of weeks with three things that [teachers] could learn, so they are not overwhelmed with it. That's been a big problem. We had so much this year that they've been over inundated with stuff so I'm trying to introduce things gradually so that they don't feel like they are overwhelmed.
These comments support the idea that the ITRT role is seen by stakeholders at Osbourne High School as pivotal for providing essential professional development and training.

*Photojournalistic observations.*

While not every aspect of the job description was displayed during the on-site observation, the data does show some similarity to patterns emerging from the interviews and surveys. In this case, the image data revealed Mr. Cox more often acts as an instructional technology resource (46%) than in a training capacity (12%). On this day, Mr. Cox was also creating learning resources for teachers on integration tools (25%) and collaborating with district leaders on a project (17%).

While not every aspect of the job description was observed during the on-site day of shadowing, the data showed some similarity to patterns which emerged from the interviews and surveys. In this case, the image data revealed Mr. Cox more often acted as an instructional technology resource (46%) by responding to email, helping with web resources and assisting students. Much of his day was spent creating learning resources, specifically a newsletter for staff to increase their exposure to available tools. This accounted for 25% of his daily activity. Where the survey data indicated the highest associated task for the ITRT as training, the image data indicated this was the least observed task (12%). Mr. Cox was documented working with district specialist. Figure 40 shows his involvement in phone conversations and project development. Tasks not observed included integrated lesson planning, modeling, researching, and recommending software.
The largest percentage of Mr. Cox's observed activities were related to serving as an instructional technology resource for teachers. Based on survey data, interviews and images collected, he is recognized by his staff as a resource. Figure 41 documents part of the time Mr. Lewis spent acting as an instructional technology resource. Field notes reveal he was responding via email to a teacher inquiry regarding integration of technology.
Figure 41. Mr. Cox as instructional technology resource.

Figure 42 shows Mr. Cox works with a Google form and the back-end spreadsheet for a teacher. This support helps teachers feel more comfortable when trying to integrate new tools since they know Mr. Cox will be available to help them when they run into problems. One remark from the teacher survey stated that “He is there to help and knows just where everything is that I could need to help.”

Figure 42. Mr. Cox as a technology resource for Google forms.

Mr. Cox also spent a great deal of time during the day creating learning resources for his staff. Mrs. Tamley related during her interview that Mr. Cox spends
time sending out a newsletter to staff including “tips on new technologies… [a newsletter] is easy for teachers to pick up, take a look at it quickly and then [decide if] it is something that they can incorporate into a lesson.” Figure 43 is one of many images that demonstrate the time Mr. Cox dedicated to creating resources for his staff. The issue of his newsletter pictured here included tips to incorporate multiple Web 2.0 resources as well as computer software including ToonDoo, Google Apps for Education and Promethean ActivInspire.

Figure 43. Mr. Cox creating learning resources.

Mr. Cox was also observed working with district specialists via phone conversations concerning a project to implement Google Apps for Education across a wider population of schools in the district. Figure 44 shows Mr. Cox continuing to work on the project including creating a Google form to collect data and using a Google document to collaboratively record necessary information.
A portion of Mr. Cox's day was spent working directly with teachers. Figure 45 shows Mr. Cox working one-on-one with a teacher to introduce her to Google forms and discuss ways to integrate this web resource as an instructional strategy in her class. One teacher remarked in the survey concerning his reliance on Mr. Cox to provide awareness of technological instructional tools. “As a teacher if you learn and use the tools and knowledge that the ITRT has available for you as a teacher, your students' enjoyment in your class will increase, their 21st Century skills will improve.”
Mr. Cox described his role as having three main categories: working directly with teachers to plan integrated lessons, working with students, and technology instruction. These three categories align with roles established by the *ITRT Handbook* and the school district job description; however, they aligned very little with tasks observed during this observation. Though planning integrated lessons was a highly associated task based on the survey data, during this observation period he did not plan integrated lesson with teachers. Also researching and recommending software was not part of his activities.

**Overall impressions.**

The teacher surveys also included a component for respondents to describe Mr. Cox in metaphoric terms and explain or clarify those descriptions. These metaphors were mostly positive in description; however, some staff expressed their descriptions negatively, while others were neutral.
Figure 46. Metaphors by attribute at Osbourne High School.

All Health and Physical Education, Math, and Jr. ROTC respondents left positive metaphors concerning the ITRT. All positive metaphors described the ITRT as helpful. These fell mostly into three categories: training, planning lessons, and troubleshooting. One Health and Physical Education teacher compared Mr. Cox to a root of a tree. This teacher continued to explain, “He gives you the knowledge and tools from which you can draw tools to help your teaching tree grow.” A Social Studies teacher described Mr. Cox as “the seed of ideas which grows in my lesson, motivating me to use better technology.” A math teacher compared Mr. Cox to a rabbit, “…jumping all over the school to help those in need.” Other teachers related Mr. Cox to “the sap that acts as glue to hold the tree together,” “a Swiss army knife,” and “a Target Team Member.”
The negative metaphors seemed to reflect a lack of availability or an inability to obtain help as related in the statements “supposed to be available for software support” and “he is somewhat isolated from the rest of the school community - maybe not accessible or maybe just not utilized.” Other metaphors reflected the perception of the ITRT as being unable to perform his job effectively. One description of him maintained that his communication skills were incompatible for effectively being able “to explain how things work.” One teacher compared his availability and effectiveness to a previous ITRT.

[The previous ITRT] and I worked for two years long years to put together this civilization board game for my AP class. And it worked really, really well. And then [the previous ITRT] left, and with him going I did not have a partner anymore and the whole thing fell apart. I could never find a partner to work with me on that the way he did. You know, one who plunges into things.

There were no content areas which left a larger percentage of negative comments than any other content area.

*Disconnect does exist.*

The data shows most of this staff seem to have a high association of the ITRT with roles laid out in the *ITRT Handbook*. Only the social studies department was more likely, compared to other departments, to seek assistance with training and planning technology-integrated lessons from another teacher or the content specialist.

The staff was also surveyed concerning the ITRT role for some aspects of troubleshooting as well as assistance when using data to plan lessons. When surveyed concerning more technical issues the staff indicated that the ITRT was the main
association for help. This showed disconnect with the staff. Figure 47 shows that when asked who teachers would go to for help troubleshooting error messages on the computer, 67% of respondents indicated that the ITRT was their primary source for troubleshooting.

However, when asked who teachers would go to for help installing software, the ITRT dropped as the highest associated person. Figure 48 shows that 70% of respondents indicated that the TST was their primary source for assistance.
Principal Tamley and Mr. Cox indicated that the ITRT role included problem solving with teachers concerning various aspects of teacher computers. However, the *ITRT Handbook* clearly makes the ITRT role as a supporter of instruction separate from technical support.

In the interview with Mr. Cox he explains a strategy he employs to reduce the amount of time he spends assisting teachers with technical support issues.

Usually if they can’t find the TST I’m the next person they go to, if not the first person sometimes. I have a five minute rule, if I can’t fix it in five minutes I move on and say, ‘You’re just going to have to find the TST.’
This data shows that while many staff members do not recognize the distinction between the instructional and technical positions, ITRT has put in place a system to diminish the impact of that disconnect on the time he can devote to instructional issues.

Neither Principal Tamley nor Mr. Cox mentions the ITRT in relation to using data from assessments to plan student activities. On the teacher survey, 35% of teachers associate the ITRT with using data to plan student activities.

Figure 49. Social network analysis for using data to plan instruction at Osbourne High School.

The data shows that Osbourne High School has very clear associations with the ITRT and roles associated with that position. There is a large portion of the staff who
misconstrue troubleshooting with ITRT roles; however, the ITRT has a system in place to minimize that impact.
V. Cross Case Analysis of Case Results

The goal of this study was to document how the roles of three ITRT’s are perceived in each school by administration, teachers, and themselves. The previous chapters provided in-depth, rich descriptions and analysis of each ITRT concerning their roles and relationships in each school. The purpose of this chapter is to present a cross-case analysis of the findings from the individual case studies in order to answer the five research questions:

1. What is the perceived role of the ITRT by school leadership?
2. What is the perceived role of the ITRT by school staff?
3. What is the self-perceived role of the ITRT?
4. How closely matched are those perceptions of the role of the ITRT?
5. How closely matched are the perceptions of the ITRT to the reality of the ITRT role?

These questions are answered through a discussion of several findings discovered conducting the cross-case analyses. Preceding this discussion is a cross-case analysis summary table that is used to summarize support for the following analysis. In this table you can see the similar patterns that emerge across all perspectives in each school. The table also illustrates the few instances of dis-similarity between cases. The findings related to the research questions are summarized simultaneously following the Cross-Case Analysis Summary shown in Table 1.
Common threads and differences discovered in the data are discussed including how the perception of the stakeholders stacks up against the reality as documented by the imaged collected during the day of shadowing.
Table 1

Cross-Case Analysis Summary

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Deirdre Aoife High School</th>
<th>Taylor High School</th>
<th>Osbourne High School</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
<td>• Training</td>
<td>• Training</td>
<td>• Training</td>
</tr>
<tr>
<td></td>
<td>– One-on-one</td>
<td>– One-on-one</td>
<td>– One-on-one</td>
</tr>
<tr>
<td></td>
<td>– Department</td>
<td>– Department</td>
<td>– Department</td>
</tr>
<tr>
<td></td>
<td>– Faculty</td>
<td>– Small group</td>
<td>– Small group</td>
</tr>
<tr>
<td></td>
<td>– Co-teach</td>
<td>– Co-teach</td>
<td>– Co-teach</td>
</tr>
<tr>
<td></td>
<td>– Develop integrated</td>
<td>– County-wide</td>
<td>– Problem Solving</td>
</tr>
<tr>
<td></td>
<td>lessons – county</td>
<td>responsibilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rubric</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– Problem solving</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– Help with assessments</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>School staff</strong></td>
<td>• Training</td>
<td>• Training</td>
<td>• Training</td>
</tr>
<tr>
<td></td>
<td>– One-on-one</td>
<td>– One-on-one</td>
<td>– One-on-one</td>
</tr>
<tr>
<td></td>
<td>– Faculty</td>
<td>– Software</td>
<td>– Faculty</td>
</tr>
<tr>
<td></td>
<td>– Department</td>
<td>– Advanced software</td>
<td>– Department</td>
</tr>
<tr>
<td></td>
<td>– Software</td>
<td>troubleshooting</td>
<td>– Newslette</td>
</tr>
<tr>
<td></td>
<td>– Web 2.0</td>
<td>– Web 2.0</td>
<td>– Software</td>
</tr>
<tr>
<td></td>
<td>– Integrated Lesson</td>
<td>– Integrated Lesson</td>
<td>– Web 2.0</td>
</tr>
<tr>
<td></td>
<td>Planning</td>
<td>Planning</td>
<td>– Integrated Lesson</td>
</tr>
<tr>
<td></td>
<td>– County rubric</td>
<td>– County rubric</td>
<td>Planning</td>
</tr>
<tr>
<td></td>
<td>– Training for students</td>
<td>– Assessments – Data</td>
<td>– County rubric</td>
</tr>
<tr>
<td></td>
<td>in the classroom</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ITRT</strong></td>
<td>• Training</td>
<td>• Training</td>
<td>• Training</td>
</tr>
<tr>
<td></td>
<td>– One-on-one</td>
<td>– One-on-one</td>
<td>– One-on-one</td>
</tr>
<tr>
<td></td>
<td>– Faculty</td>
<td>– Faculty</td>
<td>– Faculty</td>
</tr>
<tr>
<td></td>
<td>– Small group</td>
<td>– Small group</td>
<td>– Department</td>
</tr>
<tr>
<td></td>
<td>– Develop integrated</td>
<td>– Advanced technology</td>
<td>– Department</td>
</tr>
<tr>
<td></td>
<td>lessons</td>
<td>training</td>
<td>– Develop integrated</td>
</tr>
<tr>
<td></td>
<td>– County rubric</td>
<td>– County rubric</td>
<td>lessons</td>
</tr>
<tr>
<td></td>
<td>– Co-teach</td>
<td>– County rubric</td>
<td>– County rubric</td>
</tr>
<tr>
<td></td>
<td>– County-wide</td>
<td>– Co-teach</td>
<td>– Model/Co-teach</td>
</tr>
<tr>
<td></td>
<td>responsibilities</td>
<td>– County-wide</td>
<td>– County-wide</td>
</tr>
<tr>
<td></td>
<td>– Problem solving</td>
<td>responsibilities</td>
<td>responsibilities</td>
</tr>
<tr>
<td></td>
<td>– Lessons repeated</td>
<td>– Problem solving</td>
<td>– Problem solving</td>
</tr>
<tr>
<td></td>
<td>year after year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1 illustrates the consistency and discrepancy of perspective within and across groups. It is noticeable that the roles associated with the ITRT expand with each perspective. Leadership had the most narrow vision of the ITRT role focusing mostly on training in various formats and working in classrooms in a co-teaching capacity. However, leadership also showed the most variability. Each principal offered at least one additional role which differed from the other cases. School staff expanded the associated roles of the ITRT to include more specific training topics and planning for 21st Century integrated lessons using the district’s high quality lesson plan rubric. Two cases included an additional role for the ITRT. In Deidre Aoife High School, the additional role included training provided for students in the classroom as a role for the ITRT. Because this training occurred explicitly in the classroom rather than solely with staff, it is considered a separate role. However, this association does not appear in the staff group in other cases. In Taylor High School, the additional role concerning assessments and data was not an association by another group in the school. However, this role was associated with the ITRT across cases by the leadership in Deidre Aoife High School. The ITRT included the entire set of “like” role associations described by leadership and school staff. They further expanded their role to include work beyond the school environment for the district at large. Two cases included an additional role for the ITRT. In the case of Taylor High School, the ITRT also included her focus on advanced technology training which was consistent with discussion from the staff concerning types of training. In the case of Deidre Aoife High School, the ITRT included the additional point of leading the same lessons for teachers year after year. The repetitive nature of classroom lessons gives a more stagnant impression of the
development of the school rather than the movement toward 21st Century integration and student-centered learning the principal described. This point was not repeated in other cases.

Common Thread: ITRT as Software and Web 2.0 Trainer

The data showed a general trend across each group that recognized the primary responsibility of the ITRT as training teachers on both software and Web 2.0 resources. The principals each describe instances of training for staff. “[Mrs. Cassidy] has a training calendar and she sets forth that training calendar monthly.” “When I walk by [Mrs. Lewis’] office there is always a teacher there sitting elbow to elbow next to her actively engaged learning something that that teacher can use in class.” “That’s where [Mr. Cox] comes in, training and troubleshooting, bringing on people who are at a variety of levels of usage.” The teachers also refer to training sessions the ITRTs offer to assist with their professional development and integration of technology in the classroom. “I am a department chair at my school and [Mrs. Cassidy] has helped me set up training for my staff using technology. And she’s training me on how to use groups in [the district’s learning management system].” “[Mrs. Lewis] will offer different sessions throughout the year to help us out with a number of things. But for the most part her focus is to help teachers.”

The metaphor response from the teacher surveys also included references to training by ITRTs. Mr. Cox “gives you the knowledge and tools from which you can draw tools to help your teaching tree grow.” Mrs. Lewis is “an eagle. Our eagle grasps each of us with her strong talons and carries us into the 21st Century.” My ITRT “is the fertilizer that promotes growth. With the help of the ITRT, growth can be promoted and
even enhanced.” During the ITRT interviews, numerous references were made to training that they provide at their respective schools. There is specific mention of department training from Mr. Cox. “I work through the departments. I find that working through the department meetings seems to be the best way.” Mrs. Lewis explains that she offers many types of sessions, “planning period training on various topics, working [one-on-one with a teacher] on a lesson plan, [sessions] during the staff development days.” The last ITRT detailed how she provided training to meet the needs of the teachers with whom she works. “I put out a training calendar and usually once a week we have certain training so there’s scheduled training for different types of things that they want to learn.”

Social network analysis from the survey data illustrated this general trend. While there were some clear inconsistencies in the perception of teachers, concerning the role of the ITRT in providing training for teachers, Figure 50 shows the high concentration of teachers in each content area who associated the ITRT with learning software (75%). Noticeable in this pattern is the split among several departments: Performing Arts, Language Arts, Mathematics, Science, Social Studies. Even though half or more of each department focused on the ITRT, there were a number of teachers who did not.
Figure 50. Social network analysis for learning software across all schools.

A more striking pattern emerged with learning Web 2.0 resources. Figure 51 shows the ITRT is highly associated with learning Web 2.0 resources (78%); however, the pattern of association diverged across the three schools with teachers in the Social Studies department.
Figure 51. Social network analysis for learning Web 2.0 across all schools.

The Social Studies Department may have underlying causes for this divergence in association. The content specialist for Social Studies was previously in the role of ITRT. When compared to other content specialists, his knowledge of 21st Century skills and integration practices comes from several years of job embedded professional development related to and focusing on increasing student learning in the classroom. His leadership of the Social Studies department across the county has included more focus on 21st Century skills and integration practices. This focus by the specialist may contribute to the split in association concerning Web 2.0 and planning integrated lessons as discussed in the following section.
Common Thread: ITRT as Assistant in Planning Integrated Lessons

Only one of the principals mentioned lesson planning as part of the ITRT role, but the staff at each school added this dimension to the ITRT role in the school beyond training. Also, all of the ITRT see this as a vital part of their job. Each staff consistently includes assistance with planning integrated lessons as a main responsibility for the ITRT. This is evident from comments and metaphors across the three schools. One teacher described the ITRT at Deidre Aoife High School as working “behind the scenes [giving] you new ideas.” Mr. Cox was credited with being the beginning of good ideas, “the seed of ideas which grows in my lesson, motivating me to use better technology.” Feedback from ITRTs on lesson development is important when creating lessons using the county high quality 21st Century lesson rubric designed by the district. “[Mrs. Lewis] has given me a lot of feedback, especially with [21st Century lessons], things I haven’t really considered.” Each ITRT described working with teachers to plan lessons for students. Each ITRT conveyed the importance of tying lessons back to the content the teacher is teaching rather than layering tools on top without any relationship to a real world application. At Osbourne High School, Mr. Cox explained how he helped one teacher explore different research report formats for students. The teacher “wanted them to put [their research] in a report, but not in the usual ‘type up a five page paper’ on it. [We planned] a different way to present it, to put it out there.” Mrs. Lewis described working with a teacher to design a high quality 21st Century lesson so that the lesson was “not about the tool but about how they would get [to the learning].” Each ITRT brings the focus of developing lessons back to the point of the lesson which is the
content the teacher is trying to teach. Mrs. Cassidy makes the point succinctly, “I think training kids is important, often I try to balance that out with ‘how are we going to integrate it’ and ‘let’s talk about the lesson you are going to do’.”

Figure 52 shows an association between integrated lesson planning and the ITRT. However, the social network analysis for planning integrated lessons (60%) indicated a lesser degree of association compared to overall training (77%). That is, there is slightly less agreement on the role of the ITRT for planning integrated lesson compared to agreement on the role of the ITRT for training. Based on survey and interview data, the staff in each school recognized the role of the ITRT in helping to plan and create integrated lessons. However, in all three days of observation, creating integrated lessons was one of the least observed or not observed activities.
When compiling all data across schools, the ITRT is associated with both training types combined at 77%. This illustrates the degree to which the ITRT is offering sessions on the use of tools. This data also sheds light on why the daily observed tasks of the ITRT included training across all three cases.

**Differences: Focus on 21st Century Skills**

The pattern of association for planning integrated lessons highlights a distinguishing pattern between schools. The instructional framework for the school
district describes a main focus as increasing the 21st Century skills of students. The accomplishment of this focus happens in the schools. At both Deidre Aoife High School and Taylor High School, the principal and ITRT mentioned or described the inclusion of 21st Century skills a combined total of nine times. The staff at both schools discussed this on two different occasions during the focus group. At Osbourne High School, the principal and ITRT mention or describe the inclusion of 21st Century skills a combined total of four times. The pattern of fewer mentions of this topic is repeated by the staff at Osbourne by not including 21st Century skills at all during the focus group.

Table 2

Stakeholder Mentions of 21st Century Skills or the High Quality Lesson Plan Rubric

<table>
<thead>
<tr>
<th></th>
<th>Deidre Aoife High School</th>
<th>Taylor High School</th>
<th>Osbourne High School</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ITRT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21st Century skills</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Lesson rubric</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Focus Interview</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21st Century skills</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Lesson rubric</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Principal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21st Century skills</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Lesson rubric</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11</td>
<td>11</td>
<td>4</td>
</tr>
</tbody>
</table>

Differences: Focus on Co-Teaching
According to the *ITRT Guidelines* and the job description for District 9, one role of the ITRT is to model effective instructional strategies and help teachers implement those strategies. The data from this study indicated that while the administration and ITRT at each school recognized this role, the school staffs did not make this association. Mrs. Cassidy remarks, “[The teachers] invite me [into the classroom] to train the kids.” Mrs. Lewis states that “a lot of times [teachers] don’t feel that comfortable with the program themselves so they will just let students either help each other or they will ask me to come in.” Even Mr. Cox remarked on a pattern with teachers where “they want me to just come in and take over the lesson for them.” In each of these instances the ITRT described the situations as modeling or co-teaching. However, what they described were instances of training for students. The interpretation of co-teaching versus training in classrooms may be part of the reason why staffs do not associate the ITRT with co-teaching. However, one staff did associate training students in the classroom. The pattern of the ITRT training in classrooms witnessed by the staff related more to training as is evident even in the descriptions used by the ITRT when referring to instances of co-teaching or modeling. During the focus interview, a teacher made a comment similar to what Mrs. Cassidy described as co-teaching, yet this teacher was referring explicitly to training students, “Our ITRT is really good. [Mrs. Cassidy] gives us suggestions, ideas, will come in and demonstrate technology to the kids.” The data show that while co-teaching is associated to the ITRT by administration and is a self-perceived role of the ITRT, the actual definition of co-teaching may be creating confusion as to what it is and what it looks like in the classroom.
Differences: Focus on Data

Using data to design technology-based instructional strategies is one of the roles expressly laid out in the ITRT Guidelines established in 2008. The Virginia Constitution requires the Board of Education to set standards for the educational practices in the state. Standard 2 of the Standards of Quality in the Code of Virginia (Va. Code, §22.1-253.13:2, 2011) states that local school divisions must hire one technology support person and one instructional technology resource teacher for every 1,000 students across all elementary and secondary levels. The General Assembly, during the 2011 session, reenacted and amended the Standards of Quality to include flexibility for school divisions concerning hiring those positions. The flexibility enabled school divisions choice concerning the use of funds allocated for one of those positions. School divisions could elect to hire a data coordinator position, an instructional technology resource teacher position, or a data coordinator/instructional resource teacher blended position. In District 9, both the technology support person and the instructional technology resource teacher positions were maintained and the school district also hired additional personnel in the data coordinator position at each secondary school. This created two roles within the school with a specific role focused on data. The difference between the two positions being the ITRT served mainly as a resource for technology integration and the data coordinator served as a resource for data analysis and interpretation. In Deidre Aoife High School the principal maintains that the ITRT should and does help teachers with assessments. Mrs. Cassidy did not expressly describe instances of reviewing data with teachers to plan instructional strategies and the staff at Deidre Aoife High School indicated a low association with the
ITRT when using data for planning lessons or student activities (Figure 15). However, a reverse trend was observed at Taylor High School. In this case, the staff had a much higher association of using data for planning lessons or student activities (Figure 32). The principal at Taylor High School did not relate the ITRT with data and planning. None of the ITRT across the three cases identified that particular role as part of their responsibilities. The data shows that while using data for planning lessons is associated to the ITRT by staff to some degree in each school it is not part of the perceived role by all stakeholders. The addition of the testing coordinator in each school could be impacting the association of that role; however, the survey responses also did not associate the data coordinators in relation to using data for planning lessons.

Differences: Focus on Troubleshooting

Troubleshooting was a concern addressed by all three ITRT. Staffs in the three schools perceive the ITRT as accessible for assistance with computer error messages. This association is small at Deidre Aoife High School and Taylor High School. The association is higher at Osbourne High School. The same pattern exists for installing software. There is zero association with the ITRT for this task at Taylor High School and a low association at Deidre Aoife High School. However, there is a high association at Osbourne High School. The principal at Osbourne High School did include troubleshooting as a role associated with the ITRT during her interview. The ITRT also discussed troubleshooting, however he regards it as a task he should not do and he employs a strategy to reduce the time spent on troubleshooting with teachers. During the focus interview for Osbourne, there was no mention of troubleshooting. The
interview data, from both the principal and ITRT at Deidre Aoife High School, showed a similar pattern. In this case the principal included problem solving concerning various aspects of teacher computers as a role of the ITRT, however there was no explicit mention of troubleshooting. The ITRT in her interview expressed frustration with troubleshooting, indicating that she does assist staff in this role to some degree. At Taylor High School, neither the principal nor the ITRT discussed troubleshooting or problem solving the computer. The overall pattern shows that in schools where the principal was more likely to associate troubleshooting or problem solving computers as a role of the ITRT there was also more association based on social network analysis data.

Differences: Focus on District-Wide Responsibilities

The role of the ITRTs is clearly established as it relates to training and lesson planning across each school. Each ITRT articulated these responsibilities during each interview. Based on evidence from interviews, the stakeholders have made plain how the ITRT act as coaches with teachers to help them design high quality lessons that integrate technology. In addition to the roles ITRT fill at their own school, there are also responsibilities they are required to fill for content specialists and the district at large. Mrs. Lewis reports how her availability is limited due to commitments and projects outside the school building. She explained that the ITRT “also support central office, so a lot of times we are asked to serve on committees or work on projects. So, sometimes we are spread pretty thin.” Mrs. Cassidy described how some of the projects the specialist ask her to complete blend with her work in the school.
I just piloted [software for annotating during test taking which] is helping the specialist, but in a way it bleeds into the classroom because if we as ITRTs don’t take the time and test out software and test out methods and think about what is right for students and what’s right for teachers then it doesn’t get done and things fail.

Mr. Cox expressed concern about the perception teachers have when the ITRT is not available due to responsibilities outside of the school building.

[We] are doing five or six thousand different things that can tear you in different directions. And then when you are doing stuff off campus too, that can tear you away from your school. [Teachers] do view us and they do see if we are there or not there, they take note of that sort of thing.

Across the three cases, the ITRT described being involved with district-wide initiatives and projects for specialists as part of their normal and expected roles and responsibilities. However, across the cases none of the other stakeholders recognized this responsibility. A caveat to that is that the initiative driving lesson plan development and submission for the judging and award ceremony is a district-wide initiative. Many of the district-wide initiatives and projects with specialists do blend with work in the schools and classrooms, so this may contribute to why principals and staff do not recognize this as a separate role of the ITRT.

**Perceptions vs. Reality**

The data shows that overall across the three schools there is some consensus and some dissensus concerning the role of the ITRT. The perception of the role of the ITRT is narrow for some stakeholders and more encompassing for others. Across the
three schools, training is seen as the main focus of the ITRT leaving out more of the coaching aspects for developing, modeling, and supporting technology integrated lessons in classrooms.

The school division established a job description for the position of ITRT that includes expectations which are congruent with the expectations established by the VA DOE. The job description includes training teachers, assisting with planning of integrated lessons, assisting with creation of resources, modeling classroom strategies, acting as a technology resource, assisting the division content specialists, and assisting with selection of software. For the basis of this study, the reality of the ITRT role – the various categories of tasks completed during a typical day – was determined from the digital images. The digital images were categorized based on the roles outlined in the job description. Figures 8, 24, and 40 illustrate the percentage of time spent by each ITRT in the various categories.

Consistently, across the three schools, the daily activities captured included training teachers and serving as a technology resource. These two activities alone account for over 50% of each of the ITRTs’ daily time. Other observed activities overlapped between schools, but were not consistent across all three. Activities overlapping between Deidre Aoife High School and Taylor High School included modeling strategies and creating integrated lessons. Mrs. Cassidy and Mrs. Lewis spent a large portion of their day, nearly one-third, involved in modeling strategies in classrooms. Both ITRT also spent a small portion of their day (2.5%) creating integrated lessons with teachers. One activity also overlapped between Taylor High School and Cox High School. Mr. Cox and Mrs. Lewis were both observed creating
learning resources. However, during this observation, Mrs. Lewis spent only 2.5% of her time, a small portion, involved in creating learning resources compared to Mr. Cox who spent 25% of his day involved in that task. One task, working with district specialists, was observed in only one school though it was mentioned across all schools in interviews and surveys. Mr. Cox was involved in a project with a district level specialist that encumbered 17% of his daily activities.

There is a consistent reality that the ITRT trains teachers and serves as a technology resource for staff in the school. Beyond those activities the daily experience of the ITRT changes between schools. However, the activities observed are consistent with the roles outlined in the job description for the school division and in the *ITRT Handbook* provided by the VA DOE.
VI. Discussion and Conclusion

Summary

Melinda Mangin (2007), an instructional leadership researcher, pointed out that there is a relationship between a principal’s knowledge of the school-based instructional leader’s roles, interactions with those leaders, and support of those roles. In her 2007 study Mangin pointed out that “greater knowledge [of roles] and interaction resulted in greater support [for the school-based leader], less knowledge and interaction translated into a lack of support” (p. 349). The study documented how principals with high levels of knowledge concerning the role of the instructional leader described the “teacher leader’s responsibilities as focused on improving teaching. . . . principals were keenly aware of how teacher leaders enacted their roles. . . . [and] principals clearly articulated the goals of teacher leadership” (p. 338-339).

This study, using a mixed-method, multi-case research design, documented evidence concerning the relationship between role clarity and the instructional technology support position. I found that within each school, stakeholder perceptions of the ITRT fall along a continuum with identification of roles having both similarities and differences within and between cases.

- Common thread: ITRT as a software and Web 2.0 trainer. Each ITRT is highly associated as a trainer for software and Web 2.0 resources. This is consistent across all cases and all groups.
• Common thread: ITRT as assistant in planning integrated lessons. The ITRT is highly associated with planning integrated lessons. This is consistent across all cases and all groups. This falls directly in line with the roles established by the state and district.

• Differences: Focus on 21st Century skills. The degree of focus on 21st Century skills seems to be dependent on the level of focus by the principal and ITRT. In the schools where the principal or ITRT more often bring 21st Century skills into the conversation during their interview, the staff also describe 21st Century skills as a focus during the focus group.

• Differences: Focus on co-teaching. The principal and ITRT include this as a role of the ITRT, staff do not. The definition of co-teaching versus student training may be contributing to this disagreement of perception.

• Differences: Focus on data. The ITRT role in relation to using data is muddled. Each staff maintains an association of the ITRT with this task to some degree, however other stakeholders do not.

• Differences: Focus on troubleshooting. Association of the ITRT with this task is mostly minimal. There does seem to be a relationship between the views of the principal concerning the ITRT role in troubleshooting and the degree of association by staff.

• Differences: Focus on district-wide responsibilities. The ITRT describe this role as it relates to their work across all cases. However, staff and principals do not mention this responsibility as it relates to the roles of the ITRT.
• Perceptions versus reality. Training is by far the most agreed upon role for the ITRT by all stakeholders. Perceptions begin to vary as the roles take on more of an instructional support nature.

This investigation revealed patterns which were consistent within and between schools. While stakeholders in general do share similar traits, there are pockets within schools where perceptions are not consistent. Finally, what emerged from the data was the understanding that schools which exhibited a greater emphasis on 21st Century skills across all stakeholders, also showed a greater alignment of perceptions concerning the role of the ITRT. This chapter discusses the findings as related to each of the five questions used to guide this study and the implications of these findings for practitioners.

Discussion

The typical barriers to integration have long been a topic of investigation. Ertmer (1999) described first and second order barriers. First-order barriers include access to equipment and training. Second order barriers are personal beliefs that influence technology integration. Overcoming second order barriers “requires challenging one’s belief systems and the institutionalized routines” (p. 48). Overcoming the knowledge of how to use technology through training does not mean that a teacher’s beliefs and practices concerning integration will change. Ertmer continues by explaining that second order barriers are reduced through high quality professional development that requires teachers to challenge their thinking and belief system.

Simply put, teachers need opportunities to observe models of integrated technology use, to reflect on and discuss their evolving ideas with mentors and
peers, and to collaborate with others on meaningful projects as they try out their new ideas about teaching and learning with technology. (p. 54)

These barriers are similar to what Kanaya et al. (2005) found concerning a teacher’s comfort level with technology and the recognition by the teachers of the value for including technology integration skills.

In District 9, it is clear that first order barriers have been removed. However, the predominant role for the ITRT according to leadership in each school remains training teachers. In each school in this study, training teachers and staff was described repeatedly as an important component of the ITRTs job function. And, in two of the three schools, training activities accounted for the largest percentage of daily activities and was a smaller part of the activities for the third ITRT as well.

While the role of trainer is clearly part of the expectations and daily activities for the ITRT in every school, what is less evident as a role is the support of instruction. The VA DOE (2008) points out that “ITRT are intended to be teachers of teachers, providers of technology professional development, and supporters of instruction” (p. 20). The depiction of the ITRT offered by Coffman (2009) lines up with the role of the ITRT described in the *ITRT Handbook* and gives a clearer description of the roles of, and outcomes associated with, the ITRT.

It’s the ITRT’s job to help teachers develop technology-related knowledge and skills so they can become more effective classroom and school leaders and, in turn, become more effective at increasing student learning. ITRTs provide classroom teachers with the latest information and research on how technology can address a diverse array of learning needs and styles, and they help them
implement emerging technologies that offer differentiated instruction, build relationships, and promote teacher leadership throughout each school division.

(p. 21)

The data indicates that teachers in these schools are willing to learn how to use various software or web resources. However, when it comes to professional development such as working with the ITRT for planning integrated lessons, coaching, or modeling in a classroom, teachers may not as receptive. Kopcha (2012) discusses the importance of having mentors available who can offer assistance and professional development to help shape a teacher’s perception for using technology. Mentors who are able to help keep technology working and who can communicate the positive aspects about technology and “improve [teacher] beliefs about their ability to plan and implement technology-integrated lessons” (p. 1118).

Mr. O’Connor at Deidre Aoife High School and Mrs. Moore at Taylor High School both described an expectation for the ITRT to assist teachers in a mentoring capacity with embedding technology into instruction rather than solely focusing on providing training on available resources, such as described by Kopcha (2012). This expectation also falls in line with Inan and Lowther (2010b). In their study they found that “Professional development and overall support for school technology proved to be influential factors that impacted laptop integration” (p. 941). The attitudes and perceptions by these principals may influence a larger association and more observed activities related to instruction than what is found at Osbourne High School.

Principal O’Conner consistently related what the ITRT did at his school to improving teacher instructional practice and moving teachers toward more student
centered instruction. His emphasis on recognizing the value of integrating technology and development of 21st Century strategies is made clear by inclusion of these skills on the school’s Continuous School Improvement Plan and the requirement for teachers to develop high quality 21st Century lessons and projects. Teachers meet with the Mrs. Cassidy during specifically allotted time for one-on-one assistance with integrated lesson development. The use of the high quality lesson plan rubric helps teachers evaluate lessons in terms of 21st Century practices. These required sessions compel teachers to continuously assess their personal beliefs about technology integration because as Ertmer (1999) explains, a teacher’s “deeply held beliefs about teacher-student roles, curricular emphases, and assessment practices” are internal barriers that cannot be trained away (p. 4). Over a decade later, this statement was reiterated by Alexander and Henderson-Rosser (2010). “Just like students, teachers need time to absorb new concepts, and they need access to ongoing support to implement the instructional strategies they gain from professional development” (p. 24). They describe the importance of professional development opportunities that provide time for teachers to internalize new strategies, utilize the strategies in the classroom and reflect on the way the strategy impacted the classroom and learning experience for the students. This type of professional development helps teachers overcome the second-order barriers that one shot training sessions cannot accomplish. However, the Pew Research Study (Purcell et. al, 2013) found that time is a factor that does have a potential negative impact for teachers. Many teachers from this the Pew Research Study expressed that their workload has increased due to the expectation that they are both content experts as well as digital integration experts, “more than eight in 10 AP and NWP teachers have
felt some increase in workloads as the internet and other digital tools become a greater part of the learning process” (p. 51).

The approach at Taylor High School is less formal than required one-on-one sessions. Mrs. Moore explains how teachers are exposed to more discussion in order to gain an understanding of the instructional value and 21st Century skills associated with technology. Also, teachers are expected – but not required – to participate in high quality 21st Century lesson development for the division-wide judging and award ceremony. Interestingly, the social network analysis showed that more teachers associate the ITRT at Taylor High School with planning integrated lessons compared to Deidre Aoife High School, even though there is no requirement at Taylor High School for them to work with the ITRT on that purpose. Further, the observed daily activities of the ITRT in both schools are nearly matched when comparing modeling instructional strategies and planning integrated lessons regardless of the principals’ expectations for teachers to work directly with the ITRT.

In contrast to the first principals’ views of the ITRT as a mentor, Mrs. Tamley’s perspective of the ITRT is more focused on first level barriers. “They know that they are expected to use [the learning management system]. And from there, my expectation is they use [technology] as an appropriate tool.” Compared to the other schools, this principal did not frame her interview answers around 21st Century instruction and did not describe a requirement or other motivation for teachers to teach integrated lessons. Her focus on the tools may be an influencing factor for the highest social network analysis percentage across the cases for the ITRT when associated with training.
When looking at the data across the three cases, the ITRT is associated with planning integrated lessons by 60% of respondents, nearly a 20% decrease compared to the data for training. The data shows that there are pockets of teachers within schools, especially within particular content areas, who are less likely to associate with the ITRT for training. When comparing the associations those same teachers make concerning planning lessons that integrate technology, the ITRT is even less associated. It seems that if teachers do not approach the ITRT for training, they are even less likely to approach the ITRT for planning integrated lessons.

Purcell et. al (2013) found that even with the additional demands on time, teachers reported being satisfied with the amount of training provided by schools, but “the vast majority of these teachers (85%) seek out their own opportunities to learn more about effectively incorporating these tools into their learning” (p. 57). Now that every software program has a Help menu, manual, online resources, and often there is video training by the publisher or other users on You Tube, the need for the ITRT to be the sole training resource for teachers is past. However, the ITRT do have a specially designed skill set due to their prior teaching mastery and the amount of professional development received as an ITRT. This special skill set enables them to assist teachers with designing and implementing integrated lessons differently that a regular classroom teacher. When teachers rely on other staff members to help them include technology in lessons, what evolves could be less focused on 21st Century integration and more like layering a new technology on top of a current lesson plan. Ertmer (1999) described, “Teachers whose visions are directed toward using technology to improve what they already do are likely to achieve a different level of integration when compared
to teachers who are striving to learn and implement wholly new skills and instructional practices” (p. 49).

During the interviews, ITRT in each school discussed ways they implement professional development for teachers. They described these mentoring opportunities as taking the form of discussions, developing lessons, and co-teaching in the classroom to increase 21st Century instruction. When looking at the data what shows most clearly is that training is a primary role with mentoring activities such as planning integrated lessons and co-teaching following behind. The focus on technical types of assistance – first order barriers – doesn’t allow for coaching or mentoring discussions on how or more importantly why to use the tools. Martin, Strother, Beglau, Bates, Reitzes, and Culp (2010) found that “More time spent planning lessons during [sessions with the ITRT] was associated with higher-quality lessons plans, whereas more time spent on technical assistance and problem solving were associated with lower-quality lesson plans” (p. 68). If schools are making the effort to include 21st Century integration as part of their Continuous School Improvement Plans then it would follow that the schools are also expected to show growth in that area. A focus on training may not show the level of growth in 21st Century instructional practices that schools desire to achieve.

Conclusion

This study only scratches the surface in understanding the perceptions of the role of the ITRT and how those perceptions impact instructional technology support. It is clear that teachers consider the ITRT to be their main source for training on software and web resources, but fewer teachers relate the ITRT to helping plan integrated lessons. There is also a consistent lower association of instructional support through
mentoring or integrated lesson planning. The ITRT and administration declare that coaching and modeling are methods used by the ITRT, however, teachers are less likely to associate the ITRT to that role. By clarifying and aligning the roles of the ITRT perceived by all stakeholders, the vision for integration described in the Educational Technology Plan for Virginia (Virginia Department of Education, 2003) will be realized. “Integration obviously requires more than simply making hardware available to students. The tools must be used in meaningful ways that are driven by the curriculum” (p. 28). School principals expressed a desire for teachers to learn and implement 21st Century instructional practices in lessons; however, the principals’ expectations do not necessarily help clarify the roles of the ITRT in relation to making the expectations for learning and implementing 21st Century instructional practices a reality.

Implications

Policy.

In 2003, Virginia established the requirement to include an Instructional Technology Resource Teacher as part of the staff in secondary schools. In 2008, this requirement was loosened to allow flexibility in the hiring of an ITRT or a data coordinator at the school level. The district in this study hired separate individuals for both positions. This created a conflict concerning one of the roles of the ITRT. Has the establishment of the data coordinator in schools impacted the clarity of the roles of the ITRT? Should all schools in the state be required to hire both positions in order to best serve the school staff and best prepare students? Clarity in job roles is essential for successful implementation of the work of an individual. Bliese and Castro (2000) described the importance of being able to influence the work environment and the
impact that role clarity has on that influence, “low role clarity suggests that an individual does not know what actions should be performed” (p. 71). While ITRT are clear on their job roles, if teachers are not clear the resulting confusion makes it more difficult to accomplish the desired goal for supporting instructional technology integration. Further, is there a need to hold teachers accountable for implementing integration in their lessons?

**Professional development.**

The *ITRT Handbook* (Office of Educational Technology, 2005) begins with an introduction that establishes the importance of training and support for technology integrated instruction. “Experts and practitioners have all agreed on the importance of not just increasing technology capacity within schools, but integrating it into the curriculum” (p. 4). The position of the ITRT was created for that purpose. Is there a system in place to measure the successful integration of technology in schools? Is there a system in place to measure the clarity of ITRT roles in schools? Does the district-level office compare the success of the ITRT in his or her school to role clarity within his or her school? Is discontinuity of the perception of the roles of the ITRT preventing this purpose from being realized?

It is imperative for school districts to communicate with principals about the roles and expectation of the ITRT in their buildings. Frequent and purposeful conversations, between principals and district-level supervisors concerning roles and expectations of teacher leaders, increase principals’ support for teacher leaders. Mangin (2007) related the need for principals to provide school-level support for the teacher leader in order to establish clarity concerning roles and expectations as related to the work teachers
leaders are expected to accomplish. Are there professional development opportunities that can help administrators gain a better understanding of the role of the ITRT?

Principals with high levels of knowledge and interaction actively supported teacher leaders by communicating with teachers about teacher leadership. These principals identified teacher leaders as a resource for improvement, communicated expectations for teachers’ instructional improvement, and expected teachers to interact with the teacher leaders. (Mangin, 2007, p. 348)

How can school leadership make the roles of the ITRT more clear for staff? Could discussions between schools, concerning practices that work, help principals, new and veteran, gain a better perspective of the ways to best support the work of the ITRT in order to achieve the highest gains for staff and students?

Each school and all stakeholders in this study acknowledged that the ITRT has a role in training and developing integrated lesson plans. If there are teachers who are not working directly with the ITRT, are there underlying reasons for the avoidance? Do the ITRT who are placed in schools meet the needs of that school? Do teachers recognize a benefit for working with the ITRT to develop integrated 21st Century lesson? Do lessons that are developed through professional development with the ITRT score higher on the high-quality lesson plan rubric? Does consistent work with the ITRT lead to increased levels of integration when designing lessons without assistance?

**Research.**

This study also reveals many unanswered questions. While I make the recommendation for professional development across schools concerning role of the ITRT in successful schools, what defines a successful technology integrating school?
Many schools today are very focused on standards and becoming or maintaining accreditation. In schools that are successful on the measurement of standards, how well are those teachers able to effectively integrate 21st Century skills into their lessons? Martin et al. (2010) established that “lesson plan quality was significantly associated with higher student achievement” (p. 69). Are teacher lessons in successful schools consistently being evaluated on the district high-quality lesson plan rubric?

A study by Keengwe, Schnellert, and Mills (2012) in a Midwestern high school found that “faculty believed that the integration of 1:1 computing improved traditional, at-risk, and high-achieving students learning experiences” (Conclusion, para. 1). Through the careful observation and interviews of 12 technology award-winning teachers, Ertmer et al. (2011) revealed a pattern where teachers’ beliefs concerning technology integration became the practice in their classrooms. What are the beliefs of the teachers in schools where there is little evidence of technology integration? If making changes in teachers’ technology practices requires changes in teachers’ pedagogical beliefs, can changes in those beliefs be measured? Can influences that create those changes be identified and measured?

Although many questions remain unanswered, I believe what remains clear is the dependence on the ITRT to help school staff learn and develop 21st instructional practices that benefit students. Providing resources, training, and coaching all add to the collective experience which can chip away at a teacher’s reluctance or avoidance of integrating technology in lessons. As more positive experiences are gained, more opportunities for integration will be sought. The ITRT will continue to provide the support desired to help teachers be successful in their integration endeavors.
List of References


Retrieved from http://www.jtla.org


Appendix A

Principal/School Participation Recruiting E-mail

Hello ______.

I am an educator working on my PhD in Educational Leadership from VCU. I am in my final stage of the program which is to complete my dissertation research. Working in collaboration with [insert name], your school was selected as a preferred site for inclusion in my research concerning the role of the ITRT. I would appreciate your agreement to participate in my research.

I am exploring how the ITRT functions in schools. Participation in my research will include an interview with you as the Principal and Instructional Leader of the school, an online survey for all administrative and instructional staff, a day of shadowing the ITRT and documenting that day with digital images, and a final focus group discussion with teacher and administrative volunteers.

Participation in this research is voluntary. No names or identifying references will be included in the final research analysis. A copy of the completed study will be available after the final dissertation defense.

Thank you.
Ann Nash
VCU, School of Education
Student Investigator

Dr. Jonathan Becker
jbecker@vcu.edu
VCU, School of Education
Principal Investigator

International Review Board
Office of Research Compliance and Education
msmarkow@vcu.edu
Appendix B

Principal School Consent Form

I give permission for Ann M. Nash to use this high school to conduct the study: Role clarity and instructional technology support: A naturalistic examination of various perceptions of the role of the ITRT within and across three high schools.

I understand participation in this study will include a whole faculty online survey, interviews, shadowing of the ITRT and a focus group discussion.

I also understand that no names or identifying references will be included in the final research analysis.

A copy of the completed study will be available after the final dissertation defense.

I, ________________________________, agree to allow participate in this project at Tucker High School.

_____________________________  ________________
Signature                      Date
Appendix C

Interview Informed Consent Form

I agree to have my interview included in the ITRT Role Clarity research conducted by Ann Nash. The study is being conducted as part of a dissertation project and results will be shared with division staff to inform best practices.

I give permission for the interview to be tape recorded and understand that all parts of the interview are confidential.

I understand that I do not have to answer all the questions and that I can stop the interview at any time.

I also understand that I can receive a written copy of the interview and that I can make changes, clarifications or additions to the transcript.

I, ______________________________, agree to participate in this project.

________________________________     ______________
Signature                                  Date

________________________________     ______________
Interviewer                                Date
Appendix D

Principal Interview Guide

1. Introduction, purpose of interview, anonymity
Thank you for agreeing to meet with me to discuss the technology integration and the role of the ITRT in your school. Two other schools are participating in this study as part of my dissertation research for a PhD from VCU in Educational Leadership. Patterns from your interview, the ITRT interview and teacher online surveys will be used in the focus group discussion.

The purpose of the study is to better understand how role clarity affects the actual and perceived role of the ITRT in schools. I will ask you about your expectations for teacher integration and how you perceive the function of the ITRT in your school. The results from this research will be shared with division staff to inform best practices.

All information you share with me will be confidential. I will, however, share the patterns that emerge during the focus group discussion for this school. Your name and any other names you may mention in the interview will not be used; neither will any other information that could identify you.

I would like to record the interview so that I can remember everything you say. Is that okay with you? I will transcribe the interview word by word and you give you a copy. I will make any changes, clarifications or additions you request.

I expect the interview will last at most 60 minutes. During the interview, if you feel uncomfortable with any of the questions I ask, please let me know. You can stop the interview at any time you wish.

If you give me your permission to begin the recorded interview, please sign this form. (Interview Informed Consent Form)

Do you have any questions before we start?

The interview will then proceed with questions about ideas, concepts, and issues in the following areas:

2. Background Information
How long have you been in education?
How long have you been with this school division?
How long have you been in administration?
How long have you been at this school as the principal?

3. Technology Experience
How would you describe yourself as a technology user?
Can you give some examples of how technology helps you with what you do on a daily basis?
How do you solve technology problems when you encounter them?

4. Teacher Technology Expectations
With what technology skills do you expect the students from this school to graduate?
How do you ensure that students are learning those skills?
How would you describe your overall school as technology users?
How do you encourage teachers to integrate technology?
What are your expectations for teachers concerning technology integration with their lessons?
How do you share your expectations about technology integration with your staff?

5. ITRT Expectations
What benefit does the ITRT provide to your staff?
What are some things the ITRT does to help teachers?
How does the ITRT help in relation to the School Improvement Plan?
What types of relevant training does the ITRT provide for your staff?
How does the ITRT work with teachers concerning their PGEP?
How does the ITRT work with teachers outside of PGEPs?
Can you describe any instances where the ITRT has worked closely with teachers?

6. Closure

I don’t have any more questions. It there anything you would like to add? Something you believe I should know.

Thank you for being willing to share your feelings and thoughts with me. As I mentioned at the beginning of the interview, you will not be identified in any way with the information you have given. I will be getting you a copy of the interview for your review so you can make changes or additions. Again, thank you.
Appendix E

ITRT Interview Guide

1. Introduction, purpose of interview, anonymity

Thank you for agreeing to meet with me to discuss the technology integration and the role of the ITRT in your school. Two other schools are participating in this study as part of my dissertation research for a PhD from VCU in Educational Leadership. Patterns from your interview, the ITRT interview and teacher online surveys will be used in the focus group discussion.

The purpose of the study is to better understand how role clarity affects the actual and perceived role of the ITRT in schools. I will ask you about your expectations for teacher integration and how you perceive the function of the ITRT in your school. The results from this research will be shared with division staff to inform best practices.

All information you share with me will be confidential. I will, however, share the patterns that emerge during the focus group discussion for this school. Your name and any other names you may mention in the interview will not be used, neither will any other information that could identify you.

I would like to record the interview so that I can remember everything you say. Is that okay with you? I will transcribe the interview word by word and you give you a copy. I will make any changes, clarifications or additions you request.

I expect the interview will last at most 60 minutes. During the interview, if you feel uncomfortable with any of the questions I ask, please let me know. You can stop the interview at any time you wish.

If you give me your permission to begin the recorded interview, please sign this form. (Interview Informed Consent Form)

Do you have any questions before we start?

The interview will then proceed with questions about ideas, concepts, and issues in the following areas:

2. Background Information
   How long have you been in education?
   How long have you been with this school division?
How long have you been an ITRT?
How long have you been at this school as the ITRT?

3. Teacher Technology Expectations
How would you describe the overall school as technology users?
With what technology skills are students from this school expected to graduate?
What do teachers do to help students learn those skills?
What are the expectations for teachers concerning technology integration?
How does the administration make the expectations about technology integration known to the staff?
How does the administration encourage teachers to integrate technology?
Describe the support you get from your administration to encourage teachers to integrate technology?

4. ITRT Expectations
Can you describe any instances when you have worked closely with teachers?
How does the ITRT work with teachers concerning their PGEP?
How does the ITRT work with teachers outside of PGEPs?
What are some other things you do to help teachers?
How do you help the school in relation to the School Improvement Plan?
What types of training do you provide for your staff?
What types of things do you do that you feel you shouldn’t?
What makes those things out of your “area”?

5. Closure
I don’t have any more questions. Is there anything you would like to add? Something you believe I should know.

Thank you for being willing to share your feelings and thoughts with me. As I mentioned at the beginning of the interview, you will not be identified in any way with the information you have given. I will be getting you a copy of the interview for your review so you can make changes or additions. Again, thank you.
Appendix F
Parent Notification Letter

Dear Parent,

The purpose of this letter is to inform you that I am conducting a study approved by Henrico County Public Schools as a VCU doctoral candidate. The purpose of the study is to evaluate how role clarity of the ITRT position influences the perceptions and realities of that role in Henrico County Public Schools. For my dissertation study, I will conduct one day of shadowing during October 2010 to observe and record the types of activities performed by the ITRT. This study is being conducted as part of a dissertation project and it is not being conducted by Henrico County Public Schools. However, the results from the study will be shared with the HCPS staff to inform best practice.

As a student at [Tucker, Glen Allen or Varina] High School, your son or daughter may be in a class I enter as part of my shadowing. The purpose of my observations is to document the ITRT’s day to day interactions at the school. The shadowing observation is designed to be unobtrusive and will in no way impact the classroom instruction or students. All observations will be handled confidentially. No names will be included in the observation data. No names or identifying references will be included in the final research analysis.

Please feel free to contact me if you have any questions or concerns.

Sincerely,
Ann M. Nash, Student Investigator
804-852-8120

Contact information for the Principal Investigator:
Jonathan Becker, PhD, Principal Investigator
Assistant Professor
Department of Educational Leadership
Virginia Commonwealth University
Email: jbecker@vcu.edu
Phone: 804-827-2655

Contact information for Henrico County Public Schools:
Department of Planning and Research
[Tucker, Glen Allen or Varina], Ph. D., Director
Email: [Tucker, Glen Allen or Varina]@Henrico.k12.va.us
Phone: [Redacted]
Appendix G
Integration Survey

Part 1: Opt-In

I am a Henrico County educator working on my PhD in Educational Leadership from VCU. I am in my final stage of the program which is to complete my dissertation research. I would appreciate your participation on the following survey as part of my research. The results from this research will be shared with division staff to inform best practices.

Your responses on this survey will remain completely confidential and any names you give as part of your responses will not be used. The patterns that emerge from this survey, combined with the emerging patterns from two interviews, will be used later in a focus group discussion.

The average time to take this survey is less than ten minutes.

Participation in this survey is voluntary. You may skip any questions you prefer not to answer. You may opt-out of by exiting any time before you submit your responses.

For any additional information, please feel free to contact:
Student Investigator: Ann Nash amnash@k12.va.us
Principal Investigator: Dr. Jonathan Becker jbecker@vcu.edu
International Review Board Office of Research Compliance and Education: mmarkow@vcu.edu

Please click the "Next" button to begin the survey.

Part 2: Demographic Information

Please complete the following demographic information.

Are you male or female?
In which age range would you classify yourself?
How many years have you been in education?
How many years have you taught in this district?
Which content or subject do you teach most often?

Part 3: To Whom Do You Go To For…
For each question please type in the last name and job title of the person to whom you would go. You may designate the same person for multiple tasks.

Planning lessons or project ideas?
Displaying your computer on a TV or LCD projector?
Locating web resources for lessons?
Troubleshooting error messages on the computer?
Using data from assessments to plan student activities?
Planning instructional activities integrating technology?
Learning to use software on the laptop?
Learning Web 2.0 technology tools?
Installing software?

Part 4: Describe the function of your ITRT

Please complete the following metaphor describing the function of the ITRT at your school. Then, please explain the rationale for your selection in just a few words or sentences.

Example: The school is a tree. The roots have grown deep into the community and the building itself keeps growing with every renovation or the addition of trailers on the campus. Plus the students return to the school year after year just like leaves.

My ITRT…

Part 5: Focus Group Interest

If you think you might be interested in participating in a focus group discussion, please leave your e-mail address in the space below. More information will be sent to those who are interested.

Leave your e-mail address in the following space:

Part 6: End

Thank you so much for your participation.

Your time and responses will greatly help ITRTs more clearly define their function in schools and will benefit teachers and students through better technology integration.
Teacher Survey Recruiting E-mail

Hello.

I am an educator working on my PhD in Educational Leadership from VCU. I am in my final stage of the program which is to complete my dissertation research. I would appreciate your participation on the following survey as part of my research.

I am exploring how the ITRT functions in schools.

Your responses on this survey will remain completely confidential and any names you give as part of your responses will not be used. The patterns that emerge from this survey, combined with the emerging patterns from two interviews, will be used later in a focus group discussion.

The average time to take this survey is less than ten minutes.

Please click this link to begin the survey. Participation in this survey is voluntary. You may skip any questions you prefer not to answer. You may opt-out of by exiting any time before you submit your responses.

Link will be provided here

Thank you.
Ann Nash
VCU, School of Education
Student Investigator

Dr. Jonathan Becker
jbecker@vcu.edu
VCU, School of Education
Principal Investigator

International Review Board
Office of Research Compliance and Education
msmarkow@vcu.edu
Appendix I

Focus Group Recruiting E-mail

Hello ______.

Thank you so much for your participation thus far in my research study. I am looking forward to concluding my research with a focus group discussion concerning the data that has been collected. I would love to have you participate in that discussion. We will be meeting on (Date) afternoon at 4:00 in your school library. I will provide some light refreshments for all participants that afternoon.

Participation in this research is voluntary. No names or identifying references will be included in the final research analysis. A copy of the completed study will be available after the final dissertation defense.

Please respond to this e-mail to inform me of your intent to participate in the focus group discussion.

Thank you.
Ann Nash
VCU, School of Education
Student Investigator

Dr. Jonathan Becker
jbecker@vcu.edu
VCU, School of Education
Principal Investigator

International Review Board
Office of Research Compliance and Education
msmarkow@vcu.edu
Appendix J

Focus Group Informed Consent Form

I agree to have my views expressed during this focus group discussion included in the ITRT Role Clarity research conducted by Ann Nash. The study is being conducted as part of a dissertation project and results will be shared with division staff to inform best practices.

I give permission for my views to be digitally recorded and understand that all parts of the discussion are confidential.

I understand that I do not have to answer all the questions and that I can stop the leave the discussion at any time.

I also understand that I can receive a written copy of the discussion and that I can make changes, clarifications or additions to the transcript.

I, ______________________________, agree to participate in this project.

________________________________  ________________
Signature     Date

________________________________  ______ ___________
Interviewer     Date
Appendix K
Focus Group Interview Guide

1. Introduction, purpose of interview, anonymity

Thank you for agreeing to meet with me to discuss the technology integration and the role of the ITRT in your school. Two other schools are participating in this study as part of my dissertation research for a PhD from VCU in Educational Leadership. Patterns from interviews with the Principal and the ITRT as well as the teacher online surveys have been used to directed this focus group discussion.

The purpose of the study is to better understand how role clarity affects the actual and perceived role of the ITRT in schools. I will ask you about your expectations for teacher integration and how you perceive the function of the ITRT in your school. The results from this research will be shared with division staff to inform best practices.

All information you share with me will be confidential. I will, however, share the patterns that emerge during the focus group discussion for this school. Your name and any other names you may mention in the interview will not be used, neither will any other information that could identify you.

I would like to record our discussion so that I can remember everything you say. Is that okay with you? I will transcribe the interview word by word and you give you a copy. I will make any changes, clarifications or additions you request.

I expect the interview will last at most 60 minutes. During the discussion, if you feel uncomfortable with any of the questions I ask, please let me know. You can stop the interview at any time you wish.

If you give me your permission to begin the recorded interview, please sign this form. (Focus Group Informed Consent Form)

Do you have any questions before we start?

The discussion will then proceed with questions about ideas, concepts, and issues in the following areas:

2. Admin Technology Expectations
Share data from survey and principal interview
How do you know what the administration expects as far as technology use?
How does the administration communicate that with you?
Do you feel this data accurately reflect the expectations of the administration?
How does the administration communicate what they want the teacher to implement?
What part does the ITRT play in making administration’s expectations known to teachers?

3. Teacher Technology Expectations
Share data from survey and principal interview
What are some ways you are using technology?
How does this use reflect the views of the administration on technology use?
What part does the ITRT play in helping you use technology?
Are there any things that the ITRT should not do but does?
Are there any things that the ITRT should do but doesn’t?
Do you feel this data accurately reflect what the ITRT does in your school?

4. ITRT Real versus Expectations
Share data from survey and principal interview and images from day of shadowing
What do these images and data say about technology use in your school?
How do these images and data show your school is utilizing the ITRT?
What do you think about how the ITRT is being used?
How does the ITRT help teachers meet the administration’s expectations?
How do these images compare to the administration’s expectations?
Explain how you understand the ITRT role and what the ITRT actually does to line up.

5. Closure

I don’t have any more questions. It there anything you would like to add? Something you believe I should know.

Thank you for being willing to share your feelings and thoughts with me. As I mentioned at the beginning of the interview, you will not be identified in any way with the information you have given. I will be getting you a copy of the interview for your review so you can make changes or additions. Again, thank you.
Ann Marie Nash  
8300 Finworth Lane  
North Chesterfield, VA 23237  
amnash@henrico.k12.va.us

Citizenship: United States  
Date of Birth: January 7, 1974  
Place of Birth: Lexington, VA

EDUCATION
Ph. D., Educational Leadership, Virginia Commonwealth University, expected graduation May 2013.  
Dissertation title: Role clarity and instructional technology support: A naturalistic examination of various perceptions of the role of the ITRT within and across three high schools

Master of Education, Middle Grades Education, James Madison University, August 1998.

Bachelor of Science, Psychology, James Madison University, May 1996.

Bachelor of Science, Political Science, James Madison University, May 1996.

PROFESSIONAL EXPERIENCE

K-12 Teaching Experience
Instructional Technology Resource Teacher, Henrico County Public Schools, Henrico, VA  
October 2003 – present  
Supervisors: Tom Woodward, Assistant Director, Instructional Technology  
Debbie Roethke, Instructional Technology Specialist

- Duties: Collaborate with teachers to plan engaging, student centered lessons, Model teaching strategies which include 21st Century skills in classroom instruction, Gather resources for use by teachers to enhance classroom instruction, Assist with data analysis for remediation and lesson planning, Observe teachers following the Professional Growth and Evaluation Plan
Assistant with the development of the Continuous School Improvement Plan, Design and implement staff development activities based on the Continuous School Improvement Plan, Conduct district-wide professional development sessions (Quality Questioning, Promethean Board)

Physical Science Teacher: Grade 8, Mt. Vernon Middle School, Henrico County Public Schools, Henrico, VA  
September 1998 – October 2003  
Principal: Robert Browder
- Design and implement highly motivating and engaging lessons for middle school students considered “at-risk” or behaviorally challenged, Assess student progress and utilize data to guide instruction, Develop individualized remediation plans to ensure student success and achievement

K-12 Leadership Experience

Summer School Coordinator: Henrico County Public School – Tuckahoe Middle School, Henrico, VA  
Summer 2008  
Supervisor: Carolyn Bush, Educational Specialist for Student Activities and Summer Programs
- Duties: Hired teachers and provided summer session orientation, Provided disciplinary action for student behavior as needed, Maintained student records, Designed placement of classes and nutritional schedule to meet age and academic needs

New Teacher Mentor Coordinator: Highland Springs High School, Henrico County Public Schools, Henrico, VA  
Supervisor: Al Ciarochi, Principal
- Duties: Trained incoming teachers on classroom management strategies and school-wide policies, Observed new teachers and provided feedback, Coordinated observations of master teachers in and outside the school

Staff Development Planner: Highland Springs High School and Va. Randolph Community High School, Henrico County Public Schools, Henrico, VA  
August 2004 – August 2008  
Supervisor: Al Ciarochi, Principal  
August 2009 - August 2011  
Supervisor: Robert Lowery, Principal
• Duties: Assist with the development of the Continuous School Improvement Plan, Plan and organize on-site staff development activities, Maintain records of attendance for school based staff development activities

Science Department Chair: Mt. Vernon Middle School, Henrico County Public Schools, Henrico, VA
August 2004 - June 2007
Supervisor: Robert Browder, Principal
• Duties: Provided instructional leadership to department, Observed and provide feedback for department members, Managed department budgets, Served on leadership team

PROFESSIONAL PRESENTATIONS


Nash, A. (2012, September). OneNote: Removing the paper from your classroom. Practical applications presented to teachers at Tuckahoe Middle School, Henrico, Virginia.


Nash, A. (2008, August). Questioning for Understanding to Improve Learning and Thinking: Presented to the faculties of Freeman and Godwin High Schools, Henrico County, Virginia

Nash, A. (2008, August). Questioning for Understanding to Improve Learning and Thinking: Presented to the faculty of Mount Vernon Middle School, Henrico County, Virginia

Nash, A. (2008, February). Questioning for Understanding to Improve Learning and Thinking: Observation and feedback sessions for the Mathematics Department at Fairfield Middle

Nash, A. (2008, January). Questioning for Understanding to Improve Learning and Thinking: Observation and feedback sessions for the Mathematics Department at Fairfield Middle


PROFESSIONAL SERVICES & ASSOCIATIONS

District Service

Council Member, Computer Systems Technology Advisory Council, Henrico County Public Schools, 2012-13.

Team Member, Digital Curriculum Design Team (Science), Henrico County Public Schools, 2011-2012

Committee Member, Educational Technology Advisory Committee, Henrico County Public Schools, 2008-2010.
Committee Member, *RFP Committee for Secondary Printers*, Henrico County Public Schools, 2009.


Committee Member, Technology Integration Progression Chart development committee, Henrico County Public Schools, 2007.

**HONORS AND AWARDS**

Mt. Vernon Middle School, Teacher of the Year for 2005-2006.

**REFERENCES**

Chris Corallo, Ed. D  
Assistant Superintendent, Elementary Education and Organizational Development  
Assistant Superintendent, Elementary Education and Organizational Development  
Henrico County Public Schools  
Henrico County Public Schools  
ccorallo@hernico.k12.va.us

Debbie Roethke  
Education Specialist, Organizational Development  
Education Specialist, Organizational Development  
Henrico County Public Schools  
Henrico County Public Schools  
daroethk@hernico.k12.va.us

Marilyn Royal  
Principal, Tuckahoe Middle School  
Principal, Tuckahoe Middle School  
Henrico County Public Schools  
Henrico County Public Schools  
mhroyal@hernico.k12.va.us