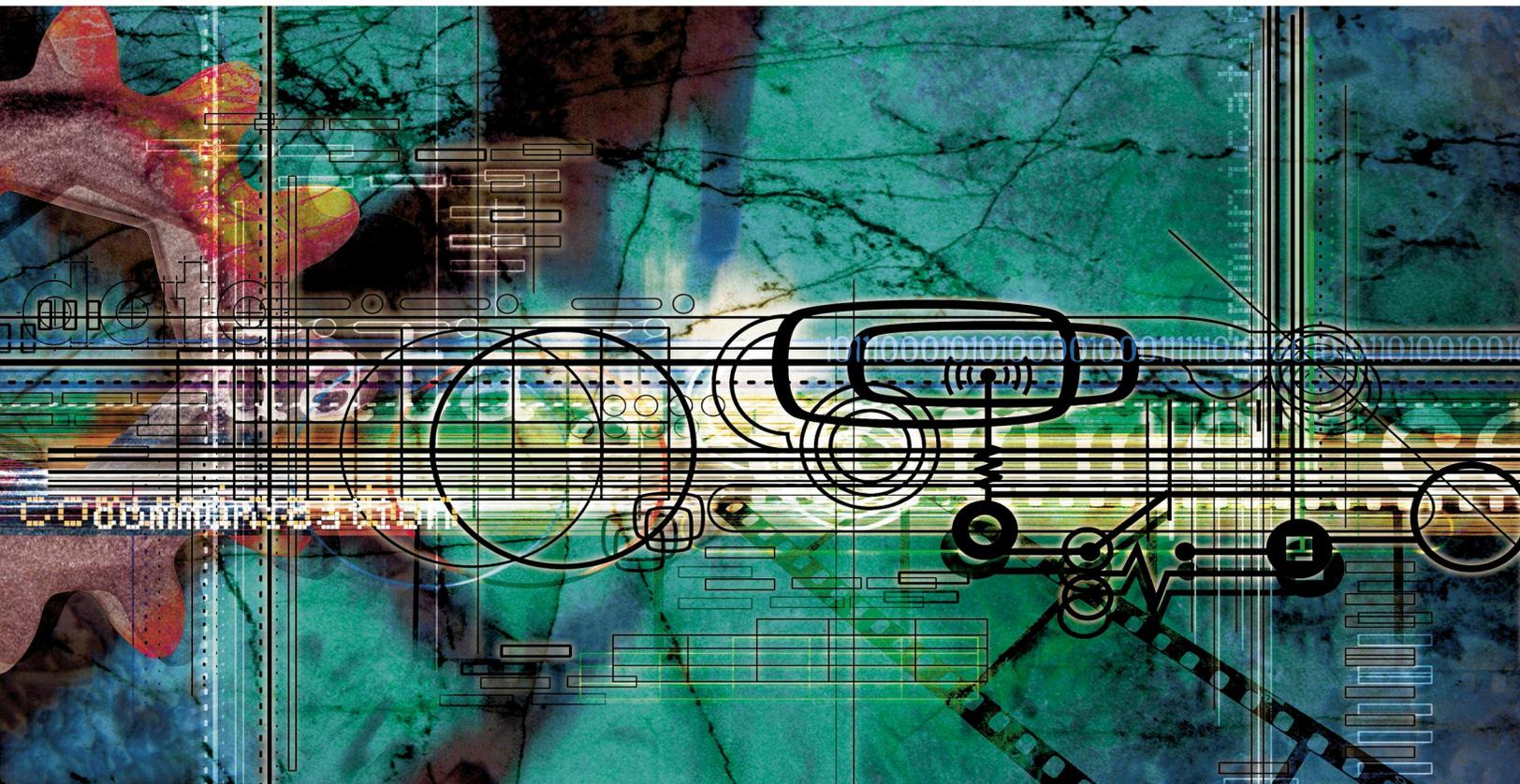


# INSTRUCTIONAL TECHNOLOGY RESOURCE TEACHER

GUIDELINES FOR TEACHERS AND ADMINISTRATORS

JULY 2008



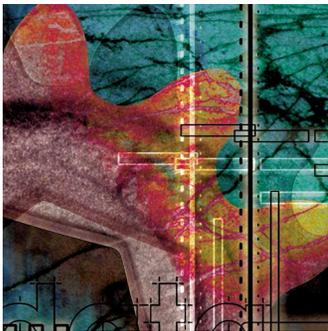
VIRGINIA DEPARTMENT OF EDUCATION  
DIVISION OF  
**TECHNOLOGY &  
CAREER EDUCATION**  
OFFICE OF EDUCATIONAL TECHNOLOGY



# INSTRUCTIONAL TECHNOLOGY RESOURCE TEACHER

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JULY 2008



This document revises the *Instructional Technology Resource Teacher and Technology Support Positions: A Handbook for School Divisions* (hereafter *ITRT Handbook*), published by the Virginia Department of Education in 2005. This new publication revisits the original intent of the ITRT program; examines results, as documented through three studies; and offers recommendations.



# ACKNOWLEDGMENTS

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## INTRODUCTION

In 2004, the Virginia General Assembly authorized and funded two new education positions: instructional technology resource teachers (ITRT) and technology support staff. This action and the reauthorization of the funding in 2006 represented a continued commitment to integrating technology into K-12 instruction. As a result, these positions now exist in all 132 Virginia school divisions, and more than \$500 million has been spent to support educational technology infrastructure. All Virginia school divisions are moving toward the requirement of employing one ITRT and one technology support staff member per 1,000 students. Based on a 2006 survey (Hooker, 2006), 83 percent had met the required ratio.

Virginia's educational technology plan (Virginia Department of Education, 2003) presented a vision of technology use in schools and classrooms, serving as a blueprint for division technology planning. The plan emphasized the importance of integrating technology into instruction and outlined the essential elements of successful technology use.

Crucial to effective technology integration is an adequate support system consisting of these elements:

- **Technology administrators** manage programs and provide educational technology leadership in their school divisions.
- **Technology support** manage each school's information network, hardware, and software.
- **ITRT** train teachers to integrate technology and software effectively.

Many of the programs included in the *No Child Left Behind Act of 2001* rely on appropriate and effective technology use. The Act also included the Enhancing Education Through Technology program, which promotes initiatives that provide teachers, principals, and administrators with the capacity to integrate technology effectively into curricula and instruction.

Three major studies of the ITRT program have been conducted to date: “A Study of Instructional Technology Resource Teachers in Virginia’s Public School Divisions: Who Are They and What Do They Do?” by Kimberly Hooker (2006), “Understanding Instructional Technology Resource Teachers: Ways of Knowing, Ways of Doing” by Janis Streich (2007), and “Evaluation of Instructional Technology Resource Teachers (ITRT) Program of the Commonwealth of Virginia” by Virginia Tech’s Office of Educational Research and Outreach (Virginia Tech, 2007). The Hooker and Virginia Tech studies were based on the same 2006 survey of ITRT in all school divisions; the Streich dissertation was based on intensive research of one division.

Hooker’s study (2006) focused on how ITRT dedicate their time:

Based on the findings, 40.9% of the respondents listed Instructional Technology Resource Teacher as their official job title. The majority of respondents held a master’s degree and teacher’s licenses. Respondents reported that 95% were full-time ITRTs. Most worked on a 10- or 11-month work calendar. The findings showed that instructional technology resource teachers were assisting teachers somewhat with technology integration, but the time spent on solving software (64.8%) and hardware (53.3%) problems remains a concern.

The majority stated that they had received training from their school divisions. The analysis showed that only 1.6% of the respondents had no training. Respondents overwhelmingly agreed that the most effective way to meet each school’s instructional technology needs is to have one full-time instructional technology resource teacher in each school.

Respondents stated there was not enough time allotted for teachers to plan for technology in the classroom and that there were insufficient funds for hardware and software needed for implementing technology into the classroom. Most agreed that support from school division administrators are assisting teachers in successfully integrating technology into the classroom and the majority of respondents disagreed that Standards of Learning (SOL) prompt teachers to use technology as a daily instructional tool (pp. 2-3).

Streich (2007) examined the daily work of ITRT and “how an ITRT attempts to promote technology integration among teachers” (p. 8). The study also addressed “previous professional and personal experiences, skills, and core values about teaching and learning” (p. 8). Streich concluded the following:

Results show that ITRTs share similar core values, skills, and background experiences regarding students, teaching and learning, and technology integration, but differed in their approach with teachers and colleagues during their first year. Differences in how individual ITRTs worked in their assigned schools reflect their core values about teachers, breadth of skills they bring to the ITRT position, and a variety of past teaching and related career experiences. Strong interpersonal skills, knowledge of curriculum and current instructional practices, technology integration, teacher leadership and coaching experiences, and the ability to build cultural synergy through coaching of individual teachers were found to be skills associated with change-making ITRTs. Technical, computer and leadership skills appear to be ancillary skills for change-making ITRTs.

Additional results indicate that ITRTs need a variety of professional development training in their role as an ITRT. Their needs were very individualized and reflected their own perception of what they need at the end of their first year to improve their practice as an ITRT (Abstract, n.p.).

The Virginia Tech evaluation (2007) incorporated an online survey, Standards of Learning (SOL) scores, a field study, and a short interrupted time series analysis to determine whether ITRT have helped integrate technology into instruction and improve SOL scores. The study, summarized in an information brief (Virginia Department of Education, 2007), found that “the ITRTs are well prepared, extremely competent, and active. The ITRT program clearly has made significant progress in helping school divisions integrate technology into their instructional programs” (p. 3).

The Virginia Tech study recommended the following:

- More ITRT are needed in each division.
- The *ITRT Handbook* should be updated.
- Methods of disseminating information should be revised.
- Administrators should be involved in the process of changing expectations about technology integration.

The study concluded that the ITRT program has produced improvements in 32 percent of the subject areas tested by the SOL tests and that the program has made significant progress in helping school divisions integrate technology into their instructional programs.

The Virginia Tech study (2007) determined that the Commonwealth’s ITRT are qualified and, for the most part, working on appropriate tasks (p. 36). It also found that “Virginia schools have integrated technology into their classrooms. Although technology integration has not transpired in every classroom, the process is well on the way to being completed with early goals. Therefore, the evidence points to successful technology integration in a relatively early phase of the ITRT program” (p. 36).

An interrupted time series analysis (Virginia Tech, 2007) showed “major improvements in approximately 32 percent (six of nine) of the SOL test areas. Significant effects were found in third-grade, fifth-grade, and high school English reading; eighth-grade English writing; and fifth-grade mathematics. Some improvement, though nonsignificant, occurred in eighth-grade English reading. There were no discernable impacts in eighth-grade and high school history, eighth-grade mathematics, and science at all grade levels. Negative impacts were found in the following subject areas: fifth-grade English writing, third- and fifth-grade history, and third-grade and high school mathematics” (p. 36). This may be due to other remediation efforts to address the SOL test areas or to the influx of a transient population. The amount of fluctuation in results noted in the analysis is typical of all SOL test areas and any given grade level.

While many of the initial *ITRT Handbook’s* assumptions were on target, it assumed incorrectly that technology integration would be uniform across the Commonwealth, regardless of division and school size and economic status. This clearly is not the case. Socioeconomic differences throughout the Commonwealth likely account for the variety of tasks ITRT perform. A related factor is the proximity of schools. The Virginia Tech study (2007) found that ITRT spend too much of their time traveling among schools in rural areas.

### **Actual Roles, Responsibilities, and Characteristics**

Both Virginia Tech’s and Hooker’s studies found that statewide, ITRT generally are prepared and qualified, with only a few exceptions at the division level. Most ITRT are highly qualified licensed teachers with at least three years of experience. ITRT tend to seek personal professional development that mirrors the needs outlined in their personal learning plans.

Numerous ITRT job descriptions have emerged (see Appendix B), reflecting how different schools and divisions envision the position; a couple of these descriptions align closely with the original intent of the position. A few school divisions have assigned additional tasks to ITRT. Examples include ITRT who also serve as assistant principal, art teacher, librarian, computer lab assistant, and keyboarding teacher. This is not optimal, as the ITRT does not get to focus on leading the school's staff toward deeper technology integration.

The most effective models place ITRT on equal footing with classroom teachers in terms of salary and professional status. This fosters more respect and less intimidation from teachers. When viewed as equals, classroom teachers will be more likely to work collaboratively with ITRT toward the common goal of integrating technology into instruction.

**Length of Contract.** Most ITRT contracts vary throughout school divisions from a traditional 10 months to 12 months (Hooker, 2006; Virginia Tech, 2007). One of the most effective models is an 11-month contract, where ITRT work through the summer but then have 20 days of leave to take off at their discretion during the school year. In the 11- and 12-month models, the additional time typically is dedicated to providing professional development events for instructional staff during summer vacation and preparing for such events.

### Job Tasks Performed with Teachers

The original *ITRT Handbook* outlined the percentage of time ITRT were expected to spend on various tasks. Based on the studies, ITRT spend the majority of their time conducting professional development, as intended. Of the ITRT who participated in the Virginia Tech study, 63 percent frequently model strategies for teachers, 51 percent frequently train teachers on hardware, and 75 percent frequently train teachers on software. Table 1 provides a breakdown of the duties ITRT perform with classroom teachers.

**Table 1. Percentage of Duties Performed by ITRT with Classroom Teachers**

Duties with Teachers	Almost Never	Rarely	Occasionally	Frequently	Very Frequently
Design Lessons	4.3	10.7	33.9	36.2	14.8
Integrate Technology	0.6	2.2	17.0	50.3	29.9
Model Strategies	1.7	5.3	29.8	41.7	21.4
Train on Hardware	2.6	5.9	40.6	39.3	11.7
Train to Use Software	0.5	1.8	22.3	51.3	24.2
Assist with Students' Projects	5.3	11.1	43.2	30.9	9.6
Maintain Web Site	13.5	14.1	24.9	26.3	21.2
Discuss Technology	5.4	11.9	44.8	30.3	7.7
Assist with Curricular Resources	1.4	3.3	20.8	44.6	29.8
Research Technologies	2.0	5.8	31.6	40.8	19.8
Help with Software Problems	1.0	5.1	28.8	41.0	24.2
Help with Hardware Problems	4.7	10.9	30.7	30.9	22.8
Overall Averages	3.6	7.3	30.7	38.6	19.8

Most divisions emphasize professional development as the main ITRT task, a few supplement the duties with other assignments, including data mining, bus duty, and classroom coverage. These added roles prevent ITRT from focusing enough time on professional development. ITRT should be available when classroom teachers need them; this includes before and after school and during lunch and planning times. When ITRT are occupied with non-ITRT tasks, they cannot support technology integration and provide instruction to teachers.

Despite the various demands on their time, ITRT have found time to collaborate with classroom teachers on integrating technology, modeling technology-integration strategies, and researching technologies. While ITRT dedicate the majority of their time to designing lessons, integrating technology, modeling strategies, and conducting professional development, individual duties vary based on financial and size factors. According to the studies, smaller divisions often rely on ITRT to cover other duties, which is typical of all personnel in smaller school systems. A division’s size generally correlates with its economic health, leading to the conclusion that these issues are related.

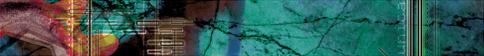
The Virginia Tech study showed that nearly 50 percent of ITRT frequently maintain Web sites. Although the *ITRT Handbook* implied that ITRT should develop and maintain Web sites, these are intended as instructional resource sites, not administrative sites. A more effective use of time would be to gather online resources for teachers and students, which has occurred in many instances.

### Job Tasks Performed with Administrators

ITRT have considerably less involvement with administrators than with teachers (Virginia Tech, 2007). On average, 58 percent of the ITRT in the Virginia Tech study rarely or never interact with administrators. Ideally, ITRT and administrators should work together to choose technology resources and make purchases for the school or division. However, in the Virginia Tech study, nearly 42 percent of ITRT rarely or never interact with administrators to plan technology development; 65 percent rarely or never train administrators on software applications; and 75 percent rarely or never collaborate with administrators to write grant proposals for technology funding. Table 2 provides a complete breakdown of tasks.

**Table 2. Percentage of Duties Performed by ITRT with Administrators**

Duties with Administrators	Almost Never	Rarely	Occasionally	Frequently	Very Frequently
Plan Technology	19.1	22.7	30.0	28.7	0.5
Train on Software Applications	35.4	29.7	24.3	7.0	2.4
Find Alternative Funds	47.2	27.8	18.5	5.2	1.3
Prepare Press Releases	64.0	21.7	12.4	1.7	0.3
Mentor Technology Leadership	25.9	21.4	37.2	12.1	3.5
Develop Assessments for Tracking	31.7	25.9	31.3	8.9	2.2
Train to Use Software	22.1	25.6	40.1	10.2	2.0
Maintain School Web Site	33.8	6.8	11.4	16.7	31.4
Maintain Division Web Site	89.6	3.3	2.7	1.6	2.8
Edit Technology Articles	30.3	21.4	33.4	11.6	3.3
Give Presentations	77.4	12.1	8.2	1.4	0.9
Work with Content Specialists	14.3	19.7	41.5	20.8	3.7
Purchase Equipment	13.1	10.5	25.0	26.3	24.0
Overall Averages	38.8	19.1	24.3	11.7	6.0



## ONE-ON-ONE PROFESSIONAL DEVELOPMENT

Mr. Burch, a principal, asked his ITRT to help prepare his monthly school board PowerPoint presentation. Previously, his secretary had developed his PowerPoints, but she was out sick. Mr. Burch initially wanted the ITRT to do the work for him; however, she guided him through his fears of the program, incorporating skills she had learned at the first ITRT Academy. Mr. Burch created his own presentation with assistance from the ITRT, who added some transitions and animations. Prior to having a school-based ITRT, the principal would not have been able to prepare his own PowerPoint and the secretary would have continued to create the presentations. The time investment on the part of the ITRT was well worth the outcome of a more confident and competent PowerPoint user.

## USING DATA TO INFORM INSTRUCTION

Mr. Cook was hired as principal of a low-achieving middle school. Despite some evidence from grades and anecdotal information, there was no hard evidence to identify the biggest deficiencies. The ITRT used the EIMS system to locate data and taught Mr. Cook how to extract the data for subpopulation groups. Mr. Cook identified the students with the greatest needs and the most deficient subject areas (reading and mathematics). He again sought out the ITRT to select instructional technologies to address the problem areas. Mr. Cook encouraged all teachers to use the available data and identify and address instructional-area weaknesses by integrating technology. By the end of the year, the entire school experienced an average 18 percent increase in reading and mathematics scores.

ITRT are instructional leaders and educational technology leaders; as such, administrators should rely upon them as mentors. In the Virginia Tech study, however, 47 percent of the ITRT rarely or never work with administrators to mentor leadership in instructional technology; only 15 percent frequently serve in this capacity. In a related role, 57 percent rarely or never help administrators develop assessments; only 11 percent frequently work with administrators in this manner. ITRT need to assume a greater role in developing assessments, particularly for professional development and technology-integrated lessons.

It was not the General Assembly's intention for ITRT to maintain technology infrastructure or school or division Web sites; this was the rationale for authorizing new technology support positions. The reality, however, is that technology support has become a major ITRT task—at least at the school level. The Virginia Tech study shows that while nearly 93 percent of ITRT rarely or never maintain division Web sites, nearly 50 percent frequently maintain school Web sites. The demands of maintaining a school Web site could be a full-time job, which means the ITRT are losing valuable time that should be spent working with teachers or administrators.

It also was intended that administrators would rely on ITRT as a knowledge base for preparing articles and presentations. In the Virginia Tech study, 52 percent of ITRT rarely or never assisted administrators with articles, and 89 percent rarely or never helped with presentations on technology integration.

These study findings provide adequate data for updating the original *ITRT Handbook*. The following chapters offer guidelines and recommendations for the ITRT program.

This chapter outlines the key responsibilities of ITRT based on the program's goals and the realities of the actual work, as determined by the study findings. The original *ITRT Handbook* outlined roles, responsibilities, and characteristics; time management expectations; factors that foster successful ITRT support; and a delineation between ITRT and technology support. Many of these initial expectations anticipated the challenges of the ITRT program and still apply. Some—in particular, those related to time management—need to be adapted due to current conditions within schools and divisions.

### **Roles, Responsibilities, and Characteristics**

The overall goal of the ITRT program is to provide effective support for curriculum and technology integration. The main challenge is to provide adequate training and support to bring teachers—at every point of the continuum, from *technophobia* to *technomania*—to an adequate level of technical expertise to meet learning goals.

The original handbook recommended developing clear descriptions of responsibilities and precise expectations of the ITRT. As demonstrated by Appendix B, ITRT have functioned under numerous job titles, indicating their roles are not well-defined or widely understood.

First and foremost, the ITRT are full-time-equivalent licensed teachers. It is important to note that while ITRT serve as resources to classroom teachers, they should not serve *as* classroom teachers. Their primary purpose is to train teachers in technology use. In this role, they are also agents of change and actively engaged in curriculum development and lesson planning. It is not the responsibility of ITRT to evaluate a teacher's performance; however, ITRT should work with teachers to assess the effectiveness of technology-based lessons.

In addition, ITRT must be available throughout the school day to plan and implement integration activities. This addresses the time challenge of providing support while meeting teaching obligations.

Duties and responsibilities of an ITRT include but are not limited to the following:

- 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

### Time Management

Time management is essential due to variables such as assigned roles, number of schools served, size of staff, available technology support and resources, and technology integration goals. Table 3 demonstrates the amount of time ITRT should spend on various tasks, with the understanding that actual times will vary among ITRT due to various school and division factors. This table revises the initial time-management chart, as spelled out in the original *ITRT Handbook*, based upon actual job demands.

The primary revision from the original intent is more time for professional development. ITRT should spend approximately five percent of their time in personal professional development to keep their knowledge and skills current. Professional development activities should include online and traditional courses, workshops and conferences, and related literature; focus topics should include instructional practices, emerging technologies, and effectiveness of existing technologies and instructional practices.



### SMART-TIME LESSONS

As a kindergarten teacher in a rural school, Mrs. Fletcher often infuses different instructional practices to revitalize her teaching. When her ITRT demonstrated a SMART Board at a faculty meeting, she wanted to figure out how to integrate it into her lessons. The ITRT conducted small group professional development during the grade-level meetings, allowing extra time for each teacher to use the SMART Board. Mrs. Fletcher created an interactive time-telling activity using an oversized clock face. The students could manipulate the clock hands, which allowed them to use various intelligences and develop a deeper understanding of the topic. Mrs. Fletcher noted how much fun the students had while learning this usually difficult standard.

**Table 3. Recommended Percentages of Time for Various ITRT Tasks**

Percent of Time	Task
<p><b>&gt;=68%</b></p> <p>Initial estimate: &gt;=70%</p>	<p>Assist teachers with the integration of technology in the classroom, train teachers to use technology, assist with curriculum development as it relates to educational technology, model instructional strategies with students, provide training and professional development, collaborate with teachers, research technology-based instructional strategies, review/evaluate technology software, offer direct assistance to teachers by way of classroom visitations, or fulfill similar kinds of duties and responsibilities as the school division may deem appropriate.</p> <p>Provide professional development activities for administrators.</p>
<p><b>&lt;=14%</b></p> <p>Initial estimate: &lt;=15%</p>	<p>Meet with administrators and content supervisors at the building and/or central office level to coordinate services and resources. Serve on building and/or division leadership teams relating to technology and instruction, professional organizations related to technology, and other responsibilities.</p> <p>Assist administrators and content supervisors with data-driven decision making relating to all areas of curriculum and instruction.</p>
<p><b>&lt;=9%</b></p> <p>Initial estimate: &lt;=10%</p>	<p>Create and implement a plan to communicate progress and activities to school, faculty, and administration (e.g., newsletter, technology Web site, e-mail notifications).</p>
<p><b>&lt;=3%</b></p> <p>Initial estimate: &lt;=4%</p>	<p>Conduct minor troubleshooting of computer lab equipment, hardware, or software problems.</p>
<p><b>&lt;=1%</b></p> <p>Initial estimate: &lt;=1%</p>	<p>Maintain records necessary to document progress and activities, such as a journal, blog, or database of activities (see Spotsylvania database example: <a href="http://www.spotsylvania.k12.va.us/itrt/ITRTEvaluation.htm">http://www.spotsylvania.k12.va.us/itrt/ITRTEvaluation.htm</a>).</p>
<p><b>&lt;=5%</b></p> <p>Initial estimate: N/A</p>	<p>Conduct personal professional development, including research relating to professional growth goals, related conference attendance, workshops, and coursework.</p>



## HIGH SCHOOL FROGS

In Ms. Lamison's high school biology course, students are required to dissect frogs and other animals throughout the year. The Commonwealth of Virginia requires that students have the choice of virtual dissection in place of the actual hands-on dissection (*Code of Virginia § 22.1-200.01*). After reviewing various software options, the ITRT selected the software "Froguts" and led hands-on training for science teachers. Several of Ms. Lamison's students were squeamish of dissection and preferred the virtual method. Ms. Lamison arranged for these students to work in the computer lab with a lab assistant while the remainder worked on actual frogs. The computer lab students, who otherwise may not have been able to participate in the activity, virtually dissected frogs and removed organs and tissue to see how all the parts relate to one another.

Like all teachers, ITRT are accountable for their time. They should report to division-level instructional leaders, such as the instructional technology coordinator, director of instruction, or similar. Some ITRT have been placed directly in a school setting where the principal is the supervisor. The division-level supervisor should accept this input while maintaining the integrity of the ITRT as a teacher of teachers who provides professional development services for the instructional staff.

ITRT are entrusted to maintain logs of their time and activities. Several methods have been employed successfully, including a narrative journal of activities, a blog for ease of access, and a database of time on task and resources created or accessed. The database/journal/blog should help account for the corresponding area of Table 1, allowing ITRT to monitor their total time in each area.

### Factors That Foster Successful ITRT Support

**Communication.** Communication is key to the success of the ITRT program. ITRT are responsible for communicating known instructional strategies and resources to the instructional personnel they serve. Many ITRT have created resource portals, which their teachers use to integrate technology regularly.

An easy way to communicate with content area teachers is through regular "Hot Topic" e-mails. These short weekly messages to teachers briefly describe an available technology and explain how it can be integrated into curricula; they also include links to sample lessons and resources.

Another communication method is through "Tech Tip Ads"—a three-to-five-minute demonstration of a technology integration tool, including an announcement of upcoming or available training opportunities, tips, tricks, and links.

**Technology Availability.** At the program's outset, it was anticipated that available technology would vary greatly among schools and divisions although the guidelines for ITRT did not reflect these differences. The Virginia Tech study (2007) substantiated these variances, due primarily to socioeconomic differences among schools, divisions, and their populations. Technology support contacts within each school or division should be able to provide an accurate inventory of the hardware and software available for classroom use. Many disadvantaged schools and divisions take advantage of grant funding through many resources such as the federal No Child Left Behind program and independent corporations. ITRT should enable teachers to make full use of available technology and recommend purchases to the school or division technology support personnel to enhance and support existing technology and curriculum. ITRT should also seek out affordable online resources to support such curriculum.

**Fiscal Resources.** With the exceptions of hardware and infrastructure, the ITRT is responsible for recommending the purchase of technology items that support instruction. These include software, consumable materials, incentives, substitutes, and emerging technologies.

**Planning.** ITRT and content area teachers should plan for technology-integrated instruction. Collaborative planning is most effective to pull from the strengths of each participant. There must be time throughout the day for ITRT to meet with teachers and administrators.

ITRT should also develop a professional development plan for their instructional staff, including courses and workshops and individual learning plans. All professional development should support the school division's overall school improvement plan and comprehensive plan as well as the instructional technology plan.

**Supervision and Evaluation.** ITRT should be supervised and evaluated by a combination of division-level instructional leaders and principals. This allows for a more comprehensive evaluation. An ITRT's and content area teacher's evaluations should vary because they do not serve many of the same functions. The focal point of an ITRT's work is to provide professional development, which should comprise the crux of their evaluations. The Salem and Spotsylvania school divisions have developed rubrics for ITRT evaluations:

Salem: <http://salemitrt.wikispaces.com/Rubric+for+ITRT+Evaluation>

Spotsylvania: <http://www.spotsylvania.k12.va.us/itrt/ITRTEvaluation.htm>

**Program Evaluation.** Each division should evaluate the effectiveness of the overall ITRT program in meeting the goals of its instructional technology and comprehensive plans. Spotsylvania offers an example of how to evaluate the ITRT program at the division level:  
[http://www.spotsylvania.k12.va.us/itrt/itrt\\_evaluation.htm](http://www.spotsylvania.k12.va.us/itrt/itrt_evaluation.htm).

### **ITRT and Teachers**

The primary responsibility of ITRT is to provide professional development to help teachers integrate technology into the curricula. The main outlets for this professional development are through modeling strategies, participating in collaborative teaching, and researching technology and reviewing software. See Table 1 for a complete breakdown.

The ultimate goal of the program is for all teachers to develop the knowledge, skill, and desire to integrate technology throughout the curricula. This is a natural outcome of the professional development provided by ITRT, who can assist teachers directly through classroom visitations and individual cooperative planning sessions. Professional development can occur anytime during, before, or after the school day.

ITRT namely are teachers of teachers. Their main responsibility is to train faculty in their school or division. The recommended approach is the five-step modeling method:

- Step 1: The content area teacher and ITRT plan together for a technology-integrated lesson.
- Step 2: The ITRT models the lesson with the content area teacher, providing only content assistance as needed.
- Step 3: The next day or period, the ITRT and the content area teacher coteach the same (or similar) lesson, sharing responsibilities 50/50.
- Step 4: The content area teacher teaches the lesson, with the ITRT assisting with technology use as needed.
- Step 5: The content area teacher and the ITRT review, reflect, and evaluate the lesson.



## OVERCOMING TECHNOPHOBIA

Mrs. McGillicuddy has taught sixth-grade English for 28 years. Her students are always near the top of the GPA list and maintain the highest SOL scores. She has reluctantly used technology for her grade book and lesson plans and to communicate, when required. She had always been successful, so why should she try something new? After her school division started requiring at least one technology-rich lesson among each teacher's three observations, she attempted to meet the requirement with printed overhead transparencies. The administrator gave her a second chance and suggested she talk to the school's ITRT. After examining Mrs. McGillicuddy's SOL class scores, the ITRT identified a couple of areas for improvement. The ITRT found some online resources to target these areas and shared her findings with Mrs. McGillicuddy, who was surprised. She thought technology would be too hard. The ITRT eased her concerns and assured her that students already have the necessary technology skills. The ITRT agreed to attend and coteach Mrs. McGillicuddy's classes for the first two periods of the day. After the lessons, the ITRT debriefed with Mrs. McGillicuddy, who requested more online resources. The ITRT showed her how to set up a PortaPortal page; three months later, Mrs. McGillicuddy was using her own PortaPortal with students in her monthly technology-integrated lessons. She has come full circle, integrating technology, when appropriate, to enhance her teaching.

Despite this goal of collaborative teaching, some educators believe ITRT are solely responsible for everything related to educational technology, including teaching all technology-enhanced lessons. In reality, ITRT are supposed to enable teachers to perform technology-related functions and integrate technology into the classroom; it is not the ITRT's responsibility to do this work for them. Teachers need to learn how to select appropriate technology tools or software and apply these to their lessons, without relying on ITRT to select and implement these tools and software. The ITRT should not be the gatekeeper for technology use.

Multiple demands on ITRT time is proving to be one of the program's greatest obstacles. Due to their knowledge of technology, ITRT frequently are assigned other duties that generally should be addressed by technology support staff. As a result, ITRT often are not available when faculty and staff have time for professional development—typically, before or after school. Another problem is that some teachers are reluctant to incorporate technology into their lessons and do not look to ITRT for assistance.

In some instances, the ITRT is viewed incorrectly as a lab assistant. This is an inappropriate use of ITRT time; the ITRT should teach the teachers, and the lab assistant should assist the teacher or ITRT in the computer lab. In other cases, ITRT have been asked to teach students about computers. The ITRT's role in this scenario should be to work with teachers on technology integration or to model strategies as needed, not to teach the students directly. Additionally, the ITRT should not be responsible for day-to-day lessons and evaluation of student learning.

Teachers need to be more aware of the ITRT program's purpose, particularly the roles ITRT are intended to fill. Toward this goal, administrators need to communicate more effectively with teachers regarding ITRT duties and help ensure that ITRT spend their time on the intended tasks.

## ITRT and Administrators

The main responsibility of an ITRT's work with administrators or content supervisors is to conduct one-on-one and group professional development. In addition, ITRT should work with administrators to research technology-related topics, including hardware and software purchasing decisions; coordinate services and resources; develop technology-related policies and procedures; demonstrate how to use data to make instructional decisions relating to technology; and serve on building and/or division leadership technology committees, such as professional development, technology plan, or technology evaluation teams. See Table 2 for a complete breakdown.

ITRT should work with content supervisors or specialists to use existing data to identify areas of deficiency. They also can collaborate to determine effective technologies for addressing these areas.

As with teachers, a developing pattern indicates administrators often ask ITRT to perform technology functions instead of doing the tasks themselves or learning how to use technology. This temporary problem fix does not address the central issue—lack of technology literacy among administrators. As one example, administrators frequently expect ITRT to create multimedia presentations (e.g., PowerPoint) for them; a better alternative is for ITRT to teach an administrator or administrative assistant/secretary to develop the presentations.

ITRT are not technology support staff and should not be asked to install or troubleshoot hardware or software. These types of assignments consume time that could be spent training administrators or teachers. Likewise, ITRT are not data specialists. While they should demonstrate for administrators how to interpret or use data, it should not be their responsibility to manage data.

### Communicating Progress

One of the biggest challenges is that some educators are reluctant to incorporate technology and will not follow through on professional development opportunities. ITRT should strive to include these teachers in training sessions and encourage them to integrate technology. As such, recruitment and communication are important ITRT tasks. Each ITRT should create and implement a plan for communicating instructional technology-related information to faculty and staff. Communication methods may include newsletters (electronic or hard copy), technology-resource Web sites, and e-mail notifications.

One proven strategy is to send a weekly e-mail update that describes upcoming professional development and offers suggestions for available technology. Each e-mail should address only one or two topics and offer links to related resources. Since some faculty members do not always check their e-mail regularly, ITRT should provide a hard copy of the communication. The hard copies should be eliminated as faculty become accustomed to checking for e-mail updates.

ITRT should use regular staff meetings to advertise professional development opportunities. Whenever possible, ITRT should plan training sessions that address the specific types of technology a teacher plans to use in the classroom. This supports the teacher's efforts and encourages others to consider incorporating similar technology.

Other proven successful strategies include:

- The five-step modeling transition strategy
- Hot topics—weekly e-mail updates
- Training sessions scheduled on teacher workdays
- Training sessions scheduled during team meetings to meet specific needs of a particular grade level or subject area team
- Creation and maintenance of instructional technology Web resources for parents as well as school personnel
- Provide one-on-one training as needed
- Research the content of a teacher's curriculum, offer suggestions for technology integration to improve instruction, and then offer to model using the five-step modeling strategy

One misinterpretation of ITRT is that they should manage a school or division Web site. ITRT should post their own resources to Web pages but not maintain a schoolwide or divisionwide Web site. Another misperception is that ITRT are administrative assistants, responsible for developing school newsletters. They should write articles relating to educational technology but should not be relied upon as newsletter editors or publishers.

### **Troubleshooting**

One of the most significant problems is that ITRT time is continually tied up with providing technical support. This clearly is a full-time job and was the impetus for creating the technology support positions.

ITRT should assist with troubleshooting only when the problem is minor and hindering a lesson with which they are involved. Otherwise, if requested, ITRT should help teachers or administrators contact the proper technical support personnel. Eventually, faculty members should learn how to contact technical support without relying upon the ITRT as a liaison.

ITRT should follow the five-minute rule. When a teacher has a technical issue, an ITRT should spend no more than five minutes attempting to solve the issue; if progress cannot be made in that time, they should direct the teacher to report the technical issue to the appropriate personnel.

In addition, ITRT should not be required to perform basic maintenance, oversee the technology inventory, or replace outdated or broken technology.

### **Document Progress and Activities**

Effective time management is essential due to varying job demands. ITRT should account daily for how much time they spend on various tasks with teachers, administrators, and on their own. Documentation methods can include keeping a journal or blog of activities or inputting the information into a database or spreadsheet. The documentation should be anecdotal and data driven to allow flexibility.

The record should help ITRT identify which faculty members they have trained on specific technology or teaching methods. This will help ITRT target which educators they still need to work with and potential training ideas for those prepared to take the next step in educational technology. The documentation should be available to administrators who are responsible for evaluating the ITRT. This record should demonstrate that ITRT have specific areas of responsibilities and do not have time for miscellaneous duties such as solving technical problems, teaching students, or preparing multimedia presentations.

The biggest problem with this task is that many ITRT do not have adequate time to document their work. If ITRT were not overextended with technical support, they would have more time to document and manage their work.



## RECOMMENDATIONS FOR THE ITRT PROGRAM

### Varying Levels of Technology Integration

The Virginia Tech study (2007) demonstrates that teachers throughout the Commonwealth incorporate different levels of technology integration. This is much like teaching in a typical classroom, where all students are at different levels. The next step should be to identify each teacher's level of integration, which can be accomplished through a customized assessment or a ready-made assessment, such as the LoTI (<http://www.loticonnection.com/>).

After the levels have been determined, the ITRT can design professional development sessions to meet the needs of various levels, such as beginners and experts. Another method would be to design training that targets specific skills and specific teachers.

### Raising Awareness About the ITRT Program

Classroom teachers and administrators need to understand the true roles and possibilities of the ITRT. To achieve this, ITRT should conduct demonstrations with teachers and administrators that allow for collaboration and a truer understanding of the ITRT's place in education. The presentations should be repeated each fall for new personnel, perhaps at the first staff meeting.

The ITRT should be open to discussions and questions but should also accept appointments for collaborative planning meetings and suggestions for professional development topics. One strategy would be to include all personnel in brainstorming workshops and suggest topics for professional development. This can be accomplished easily during regularly scheduled team/grade-level meetings. The ITRT and teachers should share what needs to be achieved to facilitate the best instruction and collaborate on lessons that meet those needs.

Another strategy would be to create a brochure outlining potential ITRT services, the proposed professional development schedule, and a plan for meeting with each grade level or subject-area team. The brochure should include links to resources and contact information for the ITRT.

### Understanding the Need for Educational Technology

The studies determined that most teachers are open-minded about integrating technology into classrooms; however, some remain resistant to educational technology or suffer from *technophobia*—a fear of technology. The Virginia Tech study (2007) identified *technophobia* as one of the most frequent ITRT problems. These teachers often avoid training and do not seek the ITRT's assistance. The successes of the program will *win over* some of these teachers; however, the ITRT and administrators need to reach out and show them the benefits of educational technology.

### Using Technology to Engage Diverse Learners

Based on Streich's study (2007), "There is a recognized need of teacher professional learning in areas of differentiated instruction and instructional strategies to meet the needs of diverse learners throughout the school division" (p. 213). The number of English-language learners is increasing throughout the



## ESL PODCASTING

Swapna entered Virginia schools in kindergarten as a bright-eyed excited five year old; however, she knew only three English words: “yes,” “no,” and “bathroom.” She had spent her entire life with her parents and grandparents, who spoke only Hindi at home and wanted to preserve their native language. Swapna was eager to learn English, which fascinated her whenever she visited stores or watched television. Her teacher took an online podcasting course taught by an ITRT through the NCLB Title IID Consortia. This taught her that the iPod was a perfect tool for Swapna, who was reluctant to talk with peers but who loved listening. The ITRT and a paraprofessional worked with children throughout the school to record some “easy reader” books and place them on the iPod. Swapna’s eyes lit up when she heard her favorite book *Brown Bear, Brown Bear* read by one of her classmates. She kept the iPod with her almost constantly and followed along with hard copies of the books she listened to. Within a month, her vocabulary had increased to 150 words; by the end of the first semester, she could understand, say, and read almost 1,000 English words.

Commonwealth; many of these students are from low socioeconomic households. Streich suggests, “Today’s teachers must be armed with sound instructional strategies and the technologies to identify these students’ learning needs” (p. 213). As a result, ITRT should provide classroom teachers with the latest research on how technology can address a diverse array of learning needs and styles. They also should help classroom teachers implement emerging technologies that offer differentiated instruction.

## More Effective Use of ITRT

One of the principal findings of the Virginia Tech study (2007) was that ITRT are spread too thinly, particularly in rural areas (p. 36). Ideally, there should be one ITRT per school or per two schools; this would require increased funding for additional positions in rural areas.

Even when ITRT are spread too thinly, they can be used more effectively through organization and planning. When an ITRT is split between locations, effective planning is essential. For instance, ITRT can conduct face-to-face training at centrally located sites; information about these sessions needs to be disseminated widely in advance to give teachers and administrators time to plan their schedules. Another strategy is for ITRT to work at a different location each day; again, communication is important so personnel know where the ITRT will be on a particular day. Another option is to alternate weeks at different schools. This works only if the ITRT has only two or three locations; otherwise, there will be too much time between visits to each school. This strategy also requires advanced planning and scheduling of professional development.

In the most extreme situations—when ITRT serve four or more schools—ITRT should have offices at alternate locations, such as the central office, where they can plan, design, and schedule professional development. This allows them to schedule time as needed at each location and provide services to all teachers and administrators.

There are many ways to share information and teach integration strategies from a distance, including developing and implementing online courses, creating tips or job aides for equipment and software, developing and maintaining online resources, and suggesting lessons and strategies through a newsletter (online or hard copy). These techniques allow for better collaboration between the ITRT and curriculum supervisors/directors/specialists. They also allow ITRT to focus on meeting the needs of each curriculum area by including teachers in professional development planning.

## Classification of ITRT Job Responsibilities and Titles

Many ITRT have difficulty conveying their job duties to other personnel. This is due, in part, to the wide variety of job titles assigned to them (see Appendix B). This can be addressed by sharing these revised guidelines with administrators and concerned leadership. They need to understand what the position entails and the kind of changes needed to integrate technology across the curriculum. Appendix C offers samples of detailed ITRT job descriptions used by various school divisions.

The simplest solution, however, may be for the ITRT to be called just that—ITRT. The title *instructional technology resource teacher* was chosen to identify the true roles of the position. 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. They are not supposed to be classroom teachers, nor are they responsible for teaching students.

## A Culture Open to Change

Streich (2007) found that “some ITRTs had an advantage of supportive leadership in a school culture that was open to change” (p. 214). Streich suggests ITRT should include the topic of “leading reform and change efforts” as part of their professional development efforts with administrators. Fostering a better understanding of technology integration and the importance of reform could improve “communication and collaboration between the ITRT and their school level leaders, embracing the concept of share leadership and teamwork” (p. 214).

## What an ITRT Is Not

Hooker (2006) found that ITRT spend 64.8 percent of their time on software issues and 53.3 percent of their time on hardware problems (p. 2). As indicated in Table 3, no more than three percent of an ITRT's time should be dedicated to providing technical support; however, because of their knowledge and skill, it is typical for ITRT to be asked to provide typical information technology (IT) assistance. Several divisions impose the 5- or 10-minute rule. If a technical issue arises, an ITRT should work briefly to solve the problem; if progress cannot be made in 5 or 10 minutes, the ITRT should help the teacher complete a technical-assistance request procedure and then implement the back-up lesson.

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## APPENDIX A SUPERINTENDENT'S MEMOS

COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF EDUCATION  
P.O. BOX 2120  
RICHMOND, VIRGINIA 23218-2120

SUPTS. MEMO NO. 5  
June 18, 2004

### REGULATORY

TO: Division Superintendents

FROM: Jo Lynne DeMary  
Superintendent of Public Instruction

SUBJECT: Staffing Requirements Prescribed by the Standards of Quality

The 2004 General Assembly passed legislation recommended by the Board of Education to amend the Standards of Quality (SOQ). The budget approved by the General Assembly includes funding for elementary resource teachers; technology positions; a planning period for secondary (i.e., middle and high school) teachers; and establishing a funding formula for the prevention, intervention, and remediation program proposed by the Board of Education. In addition, the budget provides funding to increase the number of teachers in the English as a Second Language program as proposed by the Governor.

### **SOQ Revised Standards Effective July 1, 2004**

**Prevention, intervention, and remediation program:** HB 1014 and SB 479 also amended the Standards of Quality, § 22.1-253.13:2 of the Code of Virginia, to replace the SOQ remediation program. The new language says: "In addition to the positions supported by basic aid and in support of regular school year programs of prevention, intervention, and remediation, state funding, pursuant to the appropriation act, shall be provided to fund certain full-time equivalent instructional positions for each 1,000 students in grades K through 12 who are identified as needing prevention, intervention, and remediation services. State funding for prevention, intervention, and remediation programs provided pursuant to this subsection and the appropriation act may be used to support programs for educationally at-risk students as identified by the local school boards."

Language in Item 146 of the budget bill related to this program says, "The payment shall be calculated based on one hour of additional instruction per day for identified students, using the percent of students eligible for the federal Free Lunch program as a proxy for students needing such services. Fall membership shall be multiplied by the division-level Free Lunch eligibility percentage to determine the estimated number of students eligible for services. Pupil-teacher ratios shall be applied to the estimated number of eligible students to determine the number of instructional positions needed for each school division. The pupil-teacher ratio applied for each school division shall range from 10:1 for those divisions with the most severe combined failure rates for English and math Standards of Learning test scores to 18:1 for those divisions with the lowest combined failure rates for English and math Standards of Learning test scores."

The prevention, intervention, and remediation formula described above is a funding standard, not a staffing standard. Language in the SOQ previously based the funding formula on the number of students in the bottom national quartile of the Virginia State Assessment Program tests (Stanford 9) or who did not achieve a passing score on the Standards of Learning assessments. When the 2003 General Assembly eliminated the requirement for the Stanford 9 tests, the Board of Education had to revise the standard. The Board recommended changing the policy so that funding would not be reduced when the school division's tests scores improved, and so that school divisions would have maximum flexibility in designing their prevention, intervention, and remediation programs. School divisions may use the funding for after-school programs and for summer school or intersession programs not funded by state remedial summer school funds.

**English as a Second Language teachers:** HB 1014 and SB 479 did not amend the requirement for 10 full-time equivalent instructional positions for each 1,000 students identified as having limited English proficiency.

However, Item 146 of the budget bill says, "A payment of \$22,122,525 the first year and \$25,703,423 the second year from the general fund shall be disbursed by the Department of Education to local school divisions to support the state share of 17 professional instructional positions per 1,000 students for whom English is a second language. Local school divisions shall provide a local match based on the composite index of local ability-to-pay." The budget bill also says, in § 4-11.00, "Notwithstanding any other provision of law, and until June 30, 2006, the provisions of this act shall prevail over any conflicting provision of any other law, without regard to whether such other law is enacted before or after this act..." Therefore, the budget bill prevails, and the requirement for 17 professional instructional positions per 1,000 students for whom English is a second language is a Standards of Quality staffing standard beginning in fiscal year 2004-2005.

#### **SOQ Revised Standards Effective July 1, 2005**

The following staffing standards do not become effective until July 1, 2005, although funding is provided effective July 1, 2004. Language in Item 146 of the budget bill passed by the General Assembly says, "Notwithstanding Chapters 939 and 955, of the Acts of Assembly of 2004, no school division shall be required to maintain instructional positions meeting the increased standards set forth in this paragraph until July 1, 2005."

**Elementary resource teachers:** HB 1014 and SB 479 (Chapters 939 and 955, 2004 Acts of Assembly) amended the Standards of Quality, § 22.1-253.13:2 of the Code of Virginia, to say: "Local school boards shall employ five positions per 1,000 students in grades kindergarten through five to serve as elementary resource teachers in art, music, and physical education."

Language in Item 146 of the budget bill, as passed by the special session of the 2004 General Assembly says, "Appropriations in this item include...the state's share of the following revisions to the Standards of Quality pursuant to Chapters 939 & 955 of the Acts of Assembly of 2004 (Senate Bill 479 and House Bill 1014): five elementary resource teachers per 1,000 students..."

When the Board of Education adopted its proposal to require five resource teachers per 1,000 students in grades kindergarten through five, it used three periods a week as part of the methodology to derive the five per 1,000 standard. However, the Board wanted to provide school divisions with maximum flexibility, and did not mandate three periods a week, nor did it mandate that the positions be equally divided between art, music, and physical education. Instead, the board proposed a division-wide standard of five resource teachers per 1,000 students in grades kindergarten through five to allow school divisions to have maximum flexibility in complying with 8 VAC 20-131-80 of the *Regulations Establishing Standards for Accrediting Public Schools in Virginia* (the Standards of Accreditation), which says that: "In addition, each [elementary] school shall provide instruction in art, music, and physical education and health..."

These resource teachers must be in addition to those teachers counted in meeting other staffing standards in the Standards of Quality or teachers whose positions are funded with federal funds. These positions are included in the required local expenditure for the Standards of Quality, as provided in Item 146.A.5 of the budget bill, which says, “The locality’s share based on the composite index of local ability-to-pay of the cost required by all the Standards of Quality minus its estimated revenues from the state sales and use tax (returned on the basis of school age population) in the fiscal year in which the school year begins.”

Elementary resource teachers are division-wide positions, unlike other elementary positions that are in a self-contained classroom. Therefore, if the number of positions required is a partial position, it should be counted as a partial position and rounded to two decimals.

**Technology positions:** HB 1014 and SB 479 also amended the Standards of Quality, § 22.1-253.13:2 of the Code of Virginia, to say: “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.”

Language in Item 146 of the budget bill says, “Appropriations in this item include...the state’s share of the following revisions to the Standards of Quality...one support technology position per 1,000 students the first year; one support technology position and one instructional technology position per 1,000 students the second year...”

The instructional technology resource teachers help teachers integrate technology into the classroom. Like other resource teachers, they may be responsible for instructing students, providing training and professional development, developing the curriculum, or performing similar kinds of duties and responsibilities as the school division may deem appropriate.

These instructional technology resource teachers must be in addition to those teachers counted in meeting other staffing standards in the Standards of Quality (including the new 21:1 pupil-teacher ratio for middle and secondary schools, and the six per 1,000 career and technical education teachers and special education teachers included in the Standards of Quality) or teachers whose positions are funded with federal funds. These positions are included in the required local expenditure for the Standards of Quality, as provided in Item 146.A.5 of the budget bill, which says, “The locality’s share based on the composite index of local ability-to-pay of the cost required by all the Standards of Quality minus its estimated revenues from the state sales and use tax (returned on the basis of school age population) in the fiscal year in which the school year begins.”

The instructional technology resource teacher is specified as a teacher, and therefore must be a licensed teacher in accordance with § 22.1-299 of the Code of Virginia, which states, “No teacher shall be regularly employed by a school board or paid from public funds unless such teacher holds a license or provisional license issued by the Board of Education or a three-year local eligibility license issued by a local school board pursuant to § 22.1-299.3...” The instructional support position does not have to be a licensed teacher.

School divisions may use contract personnel to meet the requirement of one technology support position per 1,000 students, so long as the contract staff provide the equivalent level of support services.

**Planning period for middle and secondary teachers:** HB 1014 and SB 479 also amended the Standards of Quality, § 22.1-253.13:2 of the Code of Virginia, to say: “Further, school boards shall assign instructional personnel in a manner that produces schoolwide ratios of students in average daily memberships to full-time equivalent teaching positions of 21 to one in middle schools and high schools. School divisions shall provide all middle and high school teachers with one planning period per day or the equivalent, unencumbered of any teaching or supervisory duties.”

Language in Item 146 of the budget bill says, “Appropriations in this item include...the state’s share of the following revisions to the Standards of Quality...one quarter of the daily planning period for teachers at the middle and high school level [the first year] and the full daily planning period at the middle and high school levels the second year...”

These instructional positions must be in addition to those teachers counted in meeting other staffing standards in the Standards of Quality or teachers whose positions are funded with federal funds, as provided in Item 146 of the budget bill. These positions are included in the required local expenditure for the Standards of Quality, as provided in Item 146.A.5 of the budget bill, which says, “The locality’s share based on the composite index of local ability-to-pay of the cost required by all the Standards of Quality minus its estimated revenues from the state sales and use tax (returned on the basis of school age population) in the fiscal year in which the school year begins.” They may teach any subject area, so long as they provide direct instruction in the classroom. Guidance counselors, library-media specialists, special education teachers, assistant principals, and positions funded with federal funds are not counted in meeting this requirement.

If you need additional information regarding the requirements of the Standards of Quality, please contact Anne Wescott (mailto:[awescott@mail.vak12ed.edu](mailto:awescott@mail.vak12ed.edu)) assistant superintendent for policy and communications at (804) 225-2403; Daniel S. Timberlake, assistant superintendent for finance, at (804) 225-2025; or Charles Finley, assistant superintendent for educational accountability, at (804) 786-9421.

JLD/ADW/jj

COMMONWEALTH OF VIRGINIA  
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SUPTS. MEMO NO. 204  
October 8, 2004

INFORMATIONAL

TO: Division Superintendents

FROM: Jo Lynne DeMary  
Superintendent of Public Instruction

SUBJECT: Transmittal of the 2004 Standards of Quality

This memorandum provides information regarding the changes to the Code of Virginia's Standards of Quality (SOQ), §§ 22.1-253.13:1 through 22.1-253.13:8, passed by the 2004 General Assembly. The revisions became effective July 1, 2004, unless otherwise noted. Attached is a copy of the SOQ, as amended.

The 2004 General Assembly revised the SOQ through the following legislation:

House Bill 1014 and Senate Bill 479 reorganized the Standards of Quality and made substantive amendments in the areas of elementary principals, assistant principals, elementary resource positions for art, music, and physical education, pupil-teacher ratios, speech language pathologist caseloads, reading specialists, technology support positions, and the current funding mechanism for remediation. However, the bills included a second enactment clause providing that any new Standard of Quality incorporated into the bills shall not become effective unless an appropriation for the standard is included in the 2004-2006 Appropriation Act. The provisions regarding principals, assistant principals, reading specialists and speech language pathologists were not funded. The following changes regarding staffing were funded in the Appropriation Act:

- Five elementary resource positions per 1,000 students in kindergarten through grade 5 for art, music, and physical education;
- One planning period per day or the equivalent, unencumbered of any teaching or supervisory duties for all middle and high school teachers;
- Two technology support positions per 1,000 students in kindergarten through grade 12 division wide.

HB 1014 and SB 479 also amended the Standards of Quality to replace the SOQ remediation program. The new language provides that in addition to the positions supported by basic aid, state funding, pursuant to the appropriation act, shall be provided to fund certain full-time equivalent instructional positions for each 1,000 students in grades K through 12 who are identified as needing prevention, intervention, and remediation services. This state funding may be used to support programs for educationally at-risk students as identified by the local school boards. See § 22.1-253.13:2 of the Code.

House Bill 769 requires that local school boards include, within the currently required career and technical education program, curricula that promote knowledge of entrepreneurship and small business ownership. The bill also requires school divisions to include dual enrollment in their plans to notify students and their parents of the availability of advanced placement classes, the International Baccalaureate program, and Academic Year Governor's School Programs. See § 22.1-253.13:1 of the Code.

House Bill 1254 requires the Board of Education to post disaggregated Standards of Learning (SOL) assessment scores and averages for each year on the Web site for the School Performance Report Card.

The scores must be disaggregated for each school by gender and by race or ethnicity, reported to the public within three months of receipt, and provided in a format that allows year-to-year comparisons. The information on the School Performance Report Card may include the results from the National Assessment of Educational Progress (NAEP). See § 22.1-253.13:3 of the Code.

HB 1294 gives the Board of Education the authority to require a school division with chronically low-performing schools, as a result of failure of the school division to implement the Standards of Quality, to undergo a division-level academic review. At the completion of the review, each school board must submit a corrective action plan to raise student achievement and to achieve full accreditation status to the Board of Education for approval and also include it in the school division's six-year improvement plan. The Board of Education may petition the circuit court having jurisdiction in the school division to mandate compliance with the relevant standard and the development or implementation of the required corrective plan when it determines that a school division has failed or refused, and continues to fail or refuse, to comply with the Standards of Quality and the development or implementation in a timely manner of the corrective plan. See §S 22.1-253.13:3, 22.1-253.13:6 and 22.1-253.13:8 of the Code.

Senate Bill 416 requires the Board of Education, in consultation with the chairpersons of the eight regional superintendents' study groups, to provide for timely review of test scores by school divisions for coding and other errors and prompt reporting to the divisions by the Department of Education of the Standards of Learning test scores that will be used to determine each school's status pursuant to the provisions of the No Child Left Behind Act of 2001 (P.L. 107-110). See § 22.1-253.13:1 of the Code.

Senate Bill 438 requires local school boards to notify parents of rising eleventh and twelfth graders regarding graduation requirements, the remaining credits the students need to graduate, and the number of years students may attend school. See § 22.1-253.13:4 of the Code.

I hope that you will find this information helpful. You can find a final legislative report for the 2004 General Assembly session on the department's Web site at <http://www.doe.virginia.gov> under *Legislation* on the Policy and Communications Web page.

For additional information, please see Superintendent's Memo No. 3, Regulatory, May 17, 2004, regarding the 2004-2006 Biennial Budget Passed by the 2004 Special Session of the General Assembly and Superintendent's Memo No. 5, Regulatory, June 18, 2004, regarding Staffing Requirements Prescribed by the Standards of Quality.

Please contact Michelle Vucci, director of policy, at (804) 371-0558 or by electronic mail at [MichelleVucci@doe.virginia.gov](mailto:MichelleVucci@doe.virginia.gov) if you need additional information.

JLD/MJP/cb

Attachment

<http://www.doe.virginia.gov/VDOE/suptsmemos/2004/inf204a.pdf>

COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF EDUCATION  
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RICHMOND, VIRGINIA 23218-2120

SUPTS. MEMO NO. 1  
January 14, 2005

INTERPRETIVE

TO: Division Superintendents

FROM: Jo Lynne DeMary  
Superintendent of Public Instruction

SUBJECT: Standards of Quality (SOQ) Technology Staffing Standards for the 2004-2006 Biennium

Regulatory Superintendent's Memorandum 5, issued on June 18, 2004, and Information Superintendents Memorandum 204, issued on October 8, 2004, provided information to school divisions regarding legislation passed by the 2004 General Assembly to amend the Standards of Quality (SOQ). The legislation enacted by the General Assembly implemented policy changes recommended by the Board of Education. The purpose of this memorandum is to provide further clarification of the revised staffing requirements related to technology in order to assist school divisions with the preparation of their 2005-2006 budgets.

The technology staffing standards do not become effective until July 1, 2005, although funding is provided effective July 1, 2004. Language in Item 146 of the Appropriation Act states:

"Notwithstanding Chapters 939 and 955, of the Acts of Assembly of 2004, no school division shall be required to maintain instructional positions meeting the increased standards set forth in this paragraph until July 1, 2005."

Standard Two of the SOQ (§ 22.1-253.13:2 of the Code of Virginia) states the following:

"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."

Language in Item 146 of the 2004 Appropriation Act also states:

"Appropriations in this item include...the state's share of the following revisions to the Standards of Quality...one support technology position per 1,000 students the first year; one support technology position and one instructional technology position per 1,000 students the second year..."

As with the other staffing standards contained in Standard Two of the SOQ, the positions for both support technology and instructional technology are intended to be full-time equivalent positions. Revisions to the SOQ approved by the Board of Education in November of 2004 clarify this standard by adding the term "full-time equivalent." (The proposed revisions to the SOQ must be approved by the 2005 General Assembly in order to become effective on July 1, 2005.)

Questions have been raised regarding the use of contract personnel to meet the requirement of technology positions. Contract personnel may be used so long as the contract provides for the equivalent level of services. This would apply both to public and private contract providers. Because the use of contract personnel will vary according to the needs of the individual school divisions, school divisions

contracting for these services may wish to consult their respective school board attorneys if there is any question that the proposed use of contract personnel could be problematic.

Funding for this new standard in the 2004-2006 biennium is included in the "Basic Aid" item in the entitlement sheets provided by the Department of Education Budget Office.

Please note that the funding for the revised standards outlined in this memorandum are included in the calculation of required local expenditures for meeting the local share of the cost of the SOQ.

**Instructional Technology Resource Teachers:** The intent of providing funding for instructional technology resource teachers in the SOQ is to assist teachers with the integration of technology in the classroom, to train teachers to use technology in an effective manner, and to assist with curriculum development as it relates to educational technology. These positions may be responsible for modeling instructional strategies with students, providing training and professional development, developing the curriculum, or performing similar kinds of duties and responsibilities as the school division may deem appropriate. Instructional technology resource teachers are intended to serve as resources to classroom teachers, but are not intended to serve as classroom teachers.

The instructional technology resource teacher is specified as a teacher, and therefore must be a licensed teacher, as stated in Regulatory Superintendent's Memorandum 5.

**Technology Support:** The technology support position provides centralized, school-based, and/or regional support for information networks. School divisions need to ensure that the duties of this position provide any of the following direct services, beginning on July 1, 2005:

- Providing centralized, school-based, and/or regional support for information networks (including a school division "help desk" or "help line").
- Providing network selection, configuration, installation, operation, repair, maintenance, software installation, troubleshooting, and security management.
- Creating and upgrading servers, computers, and networks.
- Maintaining multi-media devices, which include but are not limited to computers, telephony, monitors, and projectors.

The duties of the technology support position would not include data entry, computer programming, data collection and analysis, Web master services, or administration and management.

If you need additional information regarding the requirements of the Standards of Quality, please contact Anne Wescott (<mailto:anne.wescott@doe.virginia.gov>) assistant superintendent for policy and communications at (804) 225-2403 or Daniel S. Timberlake, assistant superintendent for finance, at (804) 225-2025.

JLD/MMV/cb



## APPENDIX B ADDITIONAL ITRT JOB TITLES

Hooker (2006) documented this list of additional job titles assigned to ITRT throughout Virginia:

Administrative Assistant for Instructional Technology  
Assistant Principal/ITRT  
Business & Information Technology Teacher  
Computer Resource Specialist  
Computer Teacher  
CTIP - Curriculum & Technology Integration Partner 1  
Director of Instructional Technology  
Director of Math and Technology  
Director of Technology  
Division Network/Technology Manager/Teacher  
Education Technology Instructor  
Educational Technology Specialist  
Full-time Health and PE/ITRT  
Information Technology Resource Teacher  
Information Technology Specialist  
Instructional Technologist  
Instructional Technology Coordinator  
Instructional Technology Facilitator  
Instructional Technology Integration Specialist  
Instructional Technology Integrator  
Instructional Technology Liaison  
Instructional Technology Resource Teacher  
Instructional Technology Specialist  
Instructional Technology Training Specialist  
Instructional Technology/SASI/High School Band Director  
Integration Specialist  
ITRT/ Librarian  
ITRT/Art Teacher  
ITRT/Music Teacher  
ITRT/Title I Coordinator/Music Teacher  
Librarian/ITRT  
Library Media Specialist  
Library Media/Instructional Technology  
Network Administrator for Software  
SASI Coordinator  
School-based Technology Specialist  
Supervisor of Student Information System  
Supervisor of Technology Services  
Technology Assistant/Network Administrator  
Technology Coach  
Technology Coordinator  
Technology Education Teacher  
Technology Integration Specialist  
Technology Resource Count  
Technology Resource Teacher  
Technology Teacher  
TIS Technology Integration Specialist  
Title I Teacher Count  
Virtual Education Technology Coordinator



## APPENDIX C SAMPLE ITRT JOB DESCRIPTIONS

### **Arlington County Public Schools** Instructional Technology Coordinator

#### **Job Description**

This is a full-time, twelve-month position. This position may be assigned to more than one site.

#### **Distinguishing Features Of Work**

ITCs working under the supervision of the Director, Office of Instructional Media & Technology (IMT), in cooperation with IMT staff and building principals provide leadership, training and support to teachers and instructional assistants in the integration of computer, video, information and communication technologies into the instructional programs of the school(s) to which they are assigned. ITCs also are responsible for carrying out basic hardware troubleshooting and assisting with network management and troubleshooting. Instructional technology coordinators use a collaborative model in working with IMT staff, principals, teachers, library media specialists, and instructional assistants. For certain projects, ITCs will work together directly with IMT staff and with other ITCs in teams. ITCs may have flexible work schedules and adjustable working hours, as approved by the Director of the Office of Instructional Media & Technology.

#### **Illustrative Examples Of Work**

- Provide leadership in the development and implementation of instructional technology plans, including technology standards for students and teachers, in collaboration with the Instructional Media & Technology Director, IMT staff, the building principals, library media specialists and the school-based technology planning committee.
- Serve as liaison between IMT and the school principal and instructional staff through regular communication, including gathering and disseminating information relevant to instructional technology.
- Work with APS and school planning teams for special projects such as building renovation, exemplary projects, school renewal, and VA DOE initiatives.
- Collaborate with school-based instructional leaders, including library media specialists, exemplary project coordinators and lead teachers to facilitate effective use of instructional technology.
- Provide training and assistance in the integration of technology and TSIPs skills to building instructional staff during and outside the school day.
- Plan and conduct regularly scheduled training sessions and workshops for individuals and groups, including modeling lessons in classrooms.
- Provide use and integration workshops on new and existing computer and video technologies.
- Conduct countywide instructional technology training including participation in large-scale countywide initiatives such as the Technology for Learning Symposium.
- Train and mentor other ITCs.
- Participate in ongoing training and projects related to job responsibilities, including workshops and meetings held by IMT staff.
- Collaborate with IMT and curriculum staff on specific initiatives including curriculum development, technology observations, textbook adoption, countywide software and Web site evaluations, video integration projects, Blackboard utilization, and piloting and testing of software.
- Set up, configure, install, and troubleshoot instructional computers, video equipment and software in collaboration with technical staff.
- Assist with basic instructional network responsibilities, including creating user accounts, making network software available and troubleshooting connectivity.
- Work with school staff to coordinate the ordering, distribution, and maintenance of computer and video equipment, software, supplies and other technologies supported and repaired by IMT.

- Conduct instructional hardware and software inventories.
- Perform other duties related to the ITC job as assigned by the Director of IMT and the IMT leadership team.

### **Qualifications**

- At least two years teaching experience delivering and integrating technology in instructional programs for PreK-12 students, including special populations.
- Bachelor's degree in education or technology related field, master's in instructional technology preferred.
- At least two years experience training teachers or other adults in the integration of technology for instruction and productivity using the following modes: modeling, one-on-one, small group, large group.
- Experience providing leadership in planning for and integrating technology in instruction, including working collaboratively and communicating effectively with teachers, principals, and parents about technology integration in instructional programs.
- At least two years experience evaluating software and media based on curriculum, learning styles, and instructional methodologies.
- Eligible for or prior completion of the Arlington Public Schools Technology Standards for Instructional Personnel (TSIPs) certification (see [www.arlington.k12.va.us/tsips](http://www.arlington.k12.va.us/tsips)).
- Practical knowledge of instructional technologies in their assigned school(s), including troubleshooting hardware and software. Examples include
  - Macintosh and PC computers, peripherals, operating systems, and software
  - Computer networks
  - Web-based instructional applications
  - Digital and analog video technologies
- Possess strong interpersonal and communication skills.
- Ability to work with minimum supervision and as a member of a self-directed team.
- Ability to lift, move, and connect computer and video-related equipment.
- Willingness to flex work schedule as needed to fulfill job responsibilities.
- Ability to balance priorities at multiple sites.
- Valid driver's license and a vehicle to provide own transportation.

**Harrisonburg City Public Schools**  
Instructional Technology Resource Teacher

**Job Description**  
(10 month position)

**Primary Function**

Provide leadership in the ongoing development and improvement of programs and services to promote technology awareness and effective use throughout the curriculum.

**Qualifications**

- Graduation from an accredited college or university with a minimum of a bachelor's degree.
- Collegiate Professional Certificate minimum (teaching license)
- A minimum of three years of successful teaching experience and experience in technology-related positions.

**Reports to**

- Director of Business and Technology

**Essential Functions**

- Coordinates the development of a technology-related curriculum.
- Promotes the use of technology in the core curriculum program.
- Serves as a resource person in technology education.
- Provides assistance to classroom teachers in effective technology integration.
- Coordinates school-community technology projects.
- Selects and prepares technology materials related to the educational program.
- Stays informed of new computer education materials and equipment.
- Examines and recommends technology materials to appropriate school personnel.
- Provides leadership in developing and promoting technology educational objectives.
- Participates in the development and implementation of special technology workshops for students and staff.
- Participates in staff development of self and others.
- Assists central office staff in evaluating the technology program.
- Communicates with parents and the community the goals of technology in the school.
- Reviews annually existing district license software for utility and cost-effectiveness.

**Lancaster County Public Schools**  
Instructional Technology Resource Teacher

**Primary Function**

The instructional technology resource teacher infuses technology to improve communications, task efficiency, and data-driven decision making as they relate to student performance.

**Qualifications**

- Hold a Professional License.
- Hold an endorsement in one of the core academic areas: language arts, mathematics, social studies, or science.
- Has three years of teaching experience in one of the core areas.
- Is fluent in core software and technologies used by Lancaster County Public Schools
  - MS Office (Word, Excel, Access, PowerPoint)
  - My Skills Tutor
  - Orchard
  - SuccessMaker Enterprise
  - Inspiration/Kidspiration
  - unitedstreaming
  - My Reading Coach
  - WorldView
  - SASixp and Integrate/Pro
  - Videoconferencing
  - EIMS/Excel Data Disaggregator
  - TestNav
- Has a background in data analysis as it relates to instruction, e.g., analyzing SOL test scores and other assessments to identify weaknesses in student performance.
- Is articulate and can adapt communication and presentation style to meet the needs of all stakeholders: administrators, teachers, parents, and students.
- Ability to maintain a good working relationship with other employees.

**Reports to**

Assistant Superintendent and Technology Coordinator

**Performance Responsibilities**

- Works directly with the technology coordinator, assistant superintendent, principals, guidance counselors, and classroom teachers to plan and implement technology-related instructional strategies which are designed to improve student performance in the core academic areas.
- Works with instructional leaders within the schools to develop technology-based remedial and enrichment programs and suggest modifications to existing curricula.
- Designs and conducts staff development programs to enhance classroom instruction through the use of available technology.
- Makes frequent presentations to staff, parents, and students in an informational or instructional role.
- Stays apprised of current trends in educational technology (both hardware and software) and informs the technology coordinator, assistant superintendent, principals, and teachers of those developments.
- Designs, maintains, and implements an Access or SQL Server database of testing and other performance data to track student achievement and program effectiveness.

**Spotsylvania County Public Schools**  
Instructional Technology Resource Teacher

**Job Title**

Instructional Technology Resource Teacher (ITRT)

**Department Name**

Office of Technology Support Services

**Primary Evaluator**

Director of Instructional Technology

**Revision Date(s)**

June 2007

**People Supervised (number)**

0

**Contract Terms**

Employee may work a 10-month 200 day contract, 10.5-month 220 day contract, or 11-month 240 day contract, 7.5 hours per day. This position is evaluated annually.

**Probationary Period**

Three (3) years for a teacher new to the profession who has not earned continuing contract status in Virginia. One (1) year for a teacher who has obtained continuing contract status in another school division in Virginia.

**Job Summary**

The instructional technology resource teacher provides on-site, job-embedded professional development for teachers to support the improvement of student learning through the use of technology tools and practices. As an instructional technology professional development coach, the ITRT assists teachers with the integration of technology in the classroom, trains teachers to use technology in an effective and productive manner, and assists with curriculum development as it relates to educational technology and academic standards. The ITRT is responsible for modeling instructional and technology integration with students, teachers, and administrators while providing training and professional development to teachers, developing curriculum related to technology initiatives with their instructional colleagues, or performing similar kinds of duties and responsibilities as the school division may deem appropriate.

**Essential Job Functions**

- Provides direct support to the classroom teacher for the utilization of technology tools and resources to support instruction in the classroom
- Consults and collaborates directly with teachers and school personnel, and works with students for the purpose of modeling or demonstrating a lesson for a teacher
- Collaborates and assists teachers in integrating appropriate technology tools in the curriculum to enhance teaching and learning
- Designs and implements high quality technology professional development opportunities throughout the school year for teachers and staff to use technology in an effective manner
- Develops a rich library of curriculum-driven support materials and technology-enhanced resources for grade levels and subject areas for teachers
- Researches and develops methods of academic standards and curriculum with effective technology-based teaching and learning strategies to improve student achievement
- Assists schools in developing and implementing short-term and long-term learning goals into school improvement plans to support student achievement objectives and proficiencies
- Facilitates the school and divisionwide technology integration effort in promoting 21<sup>st</sup> century teaching and learning skills

- Maintains licensure at the state and/or national level; assumes responsibility for professional growth and keeps materials, supplies, and skills up-to-date
- Assists in the implementation of the countywide technology plan, division instructional goals, and assigned school improvement plan
- Cooperates with other staff members in promoting a positive organizational climate;
- Takes all necessary and reasonable precautions to protect students, equipment, materials, and facilities
- Models nondiscriminatory practices in all activities
- Complies with and supports school and division regulations and policies
- Performs related duties as assigned by the Director of Instructional Technology in accordance with the school/system policies and practices

### **Knowledge, Skills, and Abilities**

- The ITRT must demonstrate the ability and professional and personal characteristics to function in the role of an instructional technology coach, teacher leader, and professional development specialist for the school division.
- He/she must possess the ability to work alone, and with small and large groups of teachers and education community members.
- The ITRT must possess the ability to deliver articulate oral presentations and written reports and the ability to establish and maintain effective working relationships with staff, teachers, administrators, and students.
- The ITRT must have a strong foundation in pedagogy and teaching methodologies and be knowledgeable about the integration of technology into the curriculum and instructional program.
- He/she must have the ability to solve problems in an efficient and timely manner.
- The ITRT must be able to communicate effectively with adult and student learners.

### **Education and Experience**

- Candidate must be a graduate of an accredited college or university. A graduate degree is preferred.
- Possess or be eligible to acquire appropriate license(s) and/or endorsement(s) for position as required by the Commonwealth of Virginia and School Board.
- Applicant who has had teaching experience must have an acceptable rating for such teaching. At least three years of teaching experience in the K-12 curriculum is preferred. Previous teacher leadership and/or professional development experience is also preferred.

### **Special Requirements**

- The ITRT must be able to provide his/her own transportation to schools throughout the division.
- He/she must possess good moral character.
- The ITRT must be able to function as a liaison between the school and the school division technology support office.

### **Physical Demands/Requirements**

- Duties performed typically in school settings include work in offices, computer labs, and classrooms.
- Frequent walking, standing, stooping, sitting, lifting up to approximately 30 pounds, and occasional movement of equipment such as technology equipment weighing up to approximately 75 pounds may be required.
- Frequent operation of a vehicle and office equipment is required.
- Vocal communication *may be* required for expressing or exchanging ideas by means of the spoken word; hearing *may be* required to perceive information at normal spoken word levels; visual acuity *may be* required for preparing and analyzing written or computer data, determining the accuracy and thoroughness of work, and observing general surroundings and activities.
- The worker is subject to inside and outside environmental conditions, noise and hazards.
- Regular contact with staff members and administrators is required by phone, e-mail, or in person.



**January 2007 Information Brief**

## AN ANALYSIS OF THE INSTRUCTIONAL TECHNOLOGY RESOURCE TEACHER (ITRT) PROGRAM IN VIRGINIA

### *Background*

Since 2001, the Commonwealth of Virginia has invested more than \$347,600,000 in technology hardware and infrastructure for schools. To ensure this investment results in improved teaching and learning, the 2005 Virginia General Assembly amended the Standards of Quality to require school boards to employ one instructional technology resource teacher (ITRT) per 1,000 students. The goal was for ITRTs to help teachers integrate technology into the classroom. To date, more than 1,200 ITRTs have been placed in classrooms throughout the Commonwealth. The General Assembly's commitment to the ITRT program is backed by more than two decades of research stressing that support—both pedagogical and technical—is essential to effective technology use in schools.

The Office of Educational Technology recently commissioned Virginia Tech's Center for Assessment, Evaluation, and Educational Programming to study the ITRT program. The findings will help agency staff better understand the roles of ITRTs in schools and use this information to plan and deliver high-quality professional development and technical assistance. Furthermore, the study's baseline data will make it possible to estimate the impact of the ITRT program on students, classrooms, and teachers over time.

### *Methods*

The study employed four methods, including (1) an online survey of all ITRTs, which requested information about job responsibilities and activities, preparation and training, and perceptions; (2) scoring of the variation between what ITRTs report as their time usage and the recommended time usage specified in the *Instructional Technology Resource Teacher and Technology Support Positions: A Handbook for School Divisions*; (3) a field study of the seven highly congruent and seven moderately congruent school divisions with regard to these scores; and (4) a short interrupted time series analysis of the past five years of the Standards of Learning (SOL) tests administered at three grade levels and end of course. The short interrupted time series model was used to determine if the initial implementation of the ITRT program showed any effects on the SOL test scores, using a baseline-projected SOL score predicted from the previous three years of test scores. The subject areas of mathematics, English

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reading, English writing, science, and history were analyzed separately. Cohen’s *d* was used to compute effect size.

## Findings

The study concluded that the ITRT program is achieving the state’s objectives. ITRT participants (1) are overwhelmingly qualified for their positions, (2) work consistently on appropriate tasks, and (3) train teachers regularly in the latest technologies. While some teachers still resist incorporating technology, the program has helped many overcome their fears; an increasing number have taken advantage of the ITRT program, particularly through technology integration, software training, and the development of curriculum resources (see Table 1). On the contrary, ITRTs interact with administrators far less often.

**Table 1. How ITRTs Spend Their Time: Percentage of Frequency for Duties with Teachers**

Duties with Teachers	Almost Never or Rarely	Occasionally	Frequently or Very Frequently
Designing lessons	15	34	51
Integrate technology	3	17	80
Model strategies	7	30	63
Train on hardware	8	41	51
Train to use software	2	22	76
Students’ projects	16	43	41
Maintain Web site	28	25	47
Discuss technology	17	45	38
Curriculum resources	5	21	74
Research technologies	8	31	61
Software problems	6	29	65
Hardware problems	15	31	54

After visiting and interviewing teachers and ITRTs, field observers concurred that classroom technology use has increased since the introduction of the program. All 14 divisions in the field study reported that ITRTs work very hard with teachers to integrate technology into the classroom. Teachers referred to ITRTs by such terms as “real treasure(s)” and “good model(s) for all of us.” Across all interviews, teachers characterized their collaborations with ITRTs as *continuous* and *ongoing*.

### Impact on Teaching and Learning

Major improvements have occurred in 32 percent of the subject areas tested by the SOL tests, most

dramatically in English reading. Significant improvements appeared in third-grade, fifth-grade, and high school English reading; eighth-grade English writing; and fifth-grade mathematics (see Table 2).

**Table 2. Estimated Positive Impact of ITRT Program on Average SOL Test Scores**

SOL Test	Effect Size*	Estimated Magnitude
Grade 3 English: Reading	1.461	Very large
Grade 5 English: Reading	0.735	Moderate
Grade 8 English: Reading	0.405	Small
End-of-Course English: Reading	1.036	Large
Grade 8 English: Writing	0.8693	Large
Grade 5 Mathematics	0.8567	Large

\* Calculated using Cohen’s *d*

Some improvement, though statistically not significant, occurred in eighth-grade English reading. There were no discernable impacts in eighth-grade and high school history, eighth-grade mathematics, and science in all grade levels. There were negative impacts in English writing at the fifth-grade level, history at the third- and fifth-grade levels, and mathematics at the third-grade and high school levels. The negative effects, however, can be attributed to a dramatic increase in scores in previous years, thus making it impossible to discern any ITRT effects at this time.

## Recommendations and Conclusions

The initial approach to the ITRT program assumed all Virginia classrooms are at the same basic stage of technology integration. Due to differences in size, wealth, and educational philosophy, this clearly is not the case. As a result of the variances in school technology, ITRT activities differ greatly among divisions and schools. In some divisions, ITRTs are spread far too thinly to have a significant impact on technology integration. A solution would be to assign one ITRT per school as opposed to several schools—or perhaps one ITRT to two schools in close proximity. Additional ITRTs, particularly in rural areas, could be very beneficial. The Department of Education should revise the *Instructional Technology Resource Teacher and Technology Support Positions: A Handbook for School Divisions* based on lessons learned to date, allowing for varying levels of technology integration among schools and divisions.

Another problem is a lack of consistent terminology when describing the ITRT position. Some ITRTs do not realize they are considered ITRTs. This is due, in part, to the fact that a similar technology position already existed in some divisions prior to the amendment of the Standards of Quality. Nevertheless, this lack of understanding could result in ITRTs not receiving information and resources disseminated through the most commonly used ITRT communication channels.

While many teachers work closely with the ITRTs, the program has not been in place long enough to change the attitudes of some staff toward technology. Furthermore, greater effort should be made to involve administrators in the process, perhaps through future training cycles. It is essential that administrators be able to recognize effective technology use and support the integration efforts of their teachers.

It is far too early to determine the ITRT program's influence on student achievement or to understand which subjects and at what grade levels this influence is most pronounced. The Office of Educational Technology should repeat the short interrupted time series analysis in two years to examine any effects that might be evident after the program matures.

In sum, the ITRTs are well prepared, extremely competent, and active. The ITRT program clearly has made significant progress in helping school divisions integrate technology into their instructional programs.

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## APPENDIX E GLOSSARY

**Accountability**—the value of technology to teaching and learning environments, including student data management; decision support; and the assessment of technology literacy among Virginia’s public school students, instructional personnel, and support staff.

**Administration**—the people or committees (departments) who comprise a body for the purpose of governing education in a specific area or geographic location, such as a school or school division.

**Assistive technologies**—innovative technologies that modify or adapt the classroom for special learning needs.

**Distance Learning**—any of a number of technologies involving course taking or educational participation from a distance, with synchronous or asynchronous communication between student and teacher.

**Educational technology**—knowledge about and use of computers and related technologies in (a) delivery, development, prescription, and assessment of instruction; (b) effective uses of computers as an aid to problem solving; (c) school and classroom administration; (d) educational research; (e) electronic information access and exchange; (f) personal and professional productivity; or (g) computer science education.

**Hardware**—the electronic devices comprising a computer system, such as a CPU, keyboard, monitor, cameras, scanners, and other peripherals.

**Integration**—consistent use of appropriate technology in all facets of curricula to facilitate learning for all students.

**Network**—a system inclusive of computers, printers, audio or visual devices, or telephones connected by equipment or cables; used to send and receive information.

**Professional development**—the collaborative development of materials, courses, certification programs, and various staff development delivery models related to the effective integration of technology in K-12 schools.

- **High-quality professional development**—sustained, intensive, and classroom-focused activities that have a positive and lasting impact on classroom instruction and the teacher’s performance in the classroom; more than just one-day or short-term workshops or conference.

**Software**—a group of commands comprising a program that directs the operation of computer(s) to perform a specific function.



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