

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

Virginia Department of Education

James Monroe Building
101 North 14th Street
Richmond, VA 23219

804-225-2855 phone
804-371-2455 fax
www.doe.virginia.gov

For more information, contact:

Lan Neugent

Assistant Superintendent for
Technology & Human Resources

804-225-2757
lan.neugent@doe.virginia.gov

Tammy M. McGraw, Ed.D.

Director, Office of Educational
Technology

804-225-4429
tammy.mcgraw@doe.virginia.gov

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.

Virginia Tech Office of Educational Research and Outreach

Center for Assessment, Evaluation,
and Educational Programming
116 War Memorial Hall (0313)
Blacksburg, VA 24061

540-231-4952 phone
540-231-2354 fax
www.vt.edu

For more information, contact:

John K. Burton, Ph.D.

Director
Office of Educational Research and
Outreach

540-231-7020
jburton@vt.edu

Center for Assessment, Evaluation, and Educational Programming

John Burton
Pat O'Reilly
Jimmie C. Fortune
Cecile Cachaper Dietrich
Eric Lichtenberger
Mike Moore
Gwen Ogle
Katrina Hundley



www.doe.virginia.gov