

School Leader Participation in Technology Staff Development: Influences on Teachers' Perceptions of Engagement with Instructional Technology

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Abstract: The primary purpose of this study is to determine the degree to which the inclusion of school building leaders in QUEST technology in-service training influences teachers' perceptions of staff and student engagement in technology-integrated instruction. Pre- and post-participation survey data were collected from the participants in this intensive staff development program and analyzed to determine not only the significance of changes in perception, but also the correlation between the organizational support provided by school leaders and the use of technology by teachers and students.

Introduction

Technology staff development has now been present in schools for many years, yet schools are still struggling with how to help teachers transfer their technology skills into their teaching practice (McKenzie, 1999). Educators have learned that the after school, software applications training method has not helped teachers use the software in classrooms, and are learning what is required to create a culture of adult learning in schools that will help school personnel blend technology into their everyday instructional practice (McKenzie, 1999).

The ultimate goal of a staff development program is to encourage teachers to apply their new skills in their work. Many researchers suggest that including building level leaders is an important factor in producing the desired change in practice (Anderson & Dexter, 2000; Costello, 1997; Darling-Hammond & McLaughlin, 1995). According to Ronald Costello (1997), "The potential of technology will never be realized if leaders do not play a central role" (p. 58). He supports this statement with organizational change research which found that change cannot be successful without active leadership (1997).

Research suggests several roles that leaders should play in successful staff development. McKenzie (1999) recommends strategies such as providing for technology coaches and mentors in order to guide teachers in putting their new skills into practice. Becker and Riel (2000) agree, but also include "providing peer guidance through formal and informal professional discussions." Ultimately, it seems, the most important factor is a shared vision of how to use technology to better educate students (Anderson & Dexter, 2000).

Background

QUEST (Quality Educational Strategies and Technologies) is a standards-based technology staff development program comprised of a training curriculum aligned to state and national technology standards for both students and teachers. The training experience includes hands-on activities in an on-site classroom laboratory, instructional planning and materials development, as well as modeling and coaching by district and building level leaders. In addition to teachers, building leaders (including a curriculum facilitator, technology facilitator or media specialist, and a building administrator) are required to attend the training in order to create a common vision for technology integration among building personnel and to provide administrative support for follow-up and implementation of the strategies learned in QUEST.

Methodology

The primary purpose of this study is to determine the degree to which including building leaders in the QUEST training has a positive impact on teachers' perceptions of their own abilities to integrate technology into their teaching and, therefore, to use technology with students. In order to determine this, the results from the SEIR*TEC Technology Integration Process Gauge (2000) General Profile have been collected and analyzed. This instrument measures participants' perceptions of technology integration in five domains: Level of Student Engagement, Environment for Teacher Engagement, Availability and Accessibility of Appropriate Resources, Organization Support, and Community Involvement.

Data analyzed includes survey results from eleven core teachers, two building curriculum facilitators, two technology facilitators, and two administrators from two schools. Teachers were chosen for participation based on their willingness to implement new strategies and technologies into their teaching. School leaders (curriculum facilitator, technology facilitator, and administrator) are included in the training in order to provide continuity between the QUEST training environment and classroom practice.

All Guilford County 2002-2003 QUEST participants completed a pre/post survey as part of their participation in the QUEST program. Pre-surveys were administered at the school building in January 2003. Post-surveys were completed primarily in June 2003, though some surveys that were not done at that time were completed the following school year. Surveys were administered by district staff who were trained to administer this survey.

The three domains that most closely relate to the goals of the QUEST program were chosen for analysis in this study: Level of Student Engagement, Environment for Teacher Engagement, and Organizational Support. Given that the tasks indicated in the Organization Support section of the survey are all administrative duties, for the purposes of this study, the Organizational Support section has been used as an indicator of the impact of building leadership.

The study undertakes a series of statistical analyses of responses to determine (a) if any change between the pre- and post-test in participants' perceptions is significant, within each of the three domains (using a paired *t*-test), and (b) the degree to which there is a correlation among participants between the reported Organizational Support domain score and those of each of the other domains—Environment for Teacher Engagement and Student Engagement—determining Pearson's correlation coefficient for each of the two pairs of variables.

Findings

The QUEST survey results indicate a general perception among QUEST participants of increased student and teacher engagement, as well as organizational support, after the QUEST training. Of 16 participants, 12 indicated an increase in student engagement, 12 indicated an increase in teacher engagement, and 11 indicated an increase in organizational support (Table 1). In addition, the minimum, maximum, and mean scores from all three domains are higher in the post-survey results than in the pre-survey results.

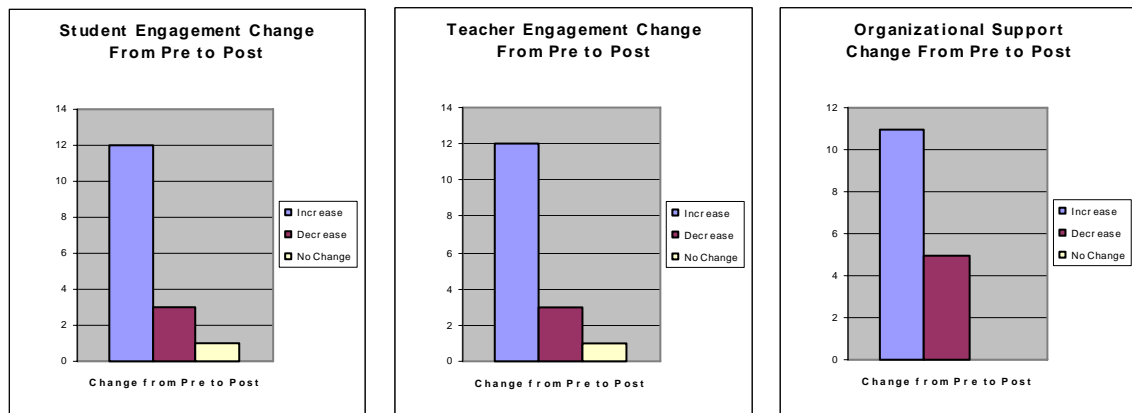


Table 1: Survey Participants

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std.
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Stu Engage Pre	16	18.00	12.00	30.00	20.2500	1.2958	5.1833
Stu Engage Post	16	13.00	19.00	32.00	26.3750	.9569	3.8275
Teach Engage Pre	16	16.00	17.00	33.00	21.8125	1.3851	5.5404
Teach Engage Post	16	17.00	19.00	36.00	29.6250	1.3505	5.4022
Org Support Pre	16	36.00	19.00	55.00	38.0625	2.8069	11.2278
Org Support Post	16	20.00	36.00	56.00	47.5625	1.3259	5.3037
Total Pre	16	64.00	48.00	112.00	80.1250	5.2009	20.8034
Total Post	16	36.00	82.00	118.00	103.5625	2.7688	11.0753
Valid N (listwise)	16						

Table 2: Descriptive Statistics

Further, the mean difference in participants' perception, from the pre to the post surveys, was statistically significant for all three domains (Table 3). For student engagement, $t(15) = 3.16$, $p < .001$; for teacher engagement, $t(15) = 4.06$, $p < .001$; for organizational support, $t(15)=3.17$, $p < .006$; all two-tailed.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Stu Engage Post - Stu Engage Pre	6.1250	7.7621	1.9405	1.9889	10.2611	3.156	15	.007
Pair 2	Teach Engage Post - Teach Engage Pre	7.8125	7.7047	1.9262	3.7070	11.9180	4.056	15	.001
Pair 3	Org Support Post - Org Support Pre	9.5000	11.9944	2.9986	3.1086	15.8914	3.168	15	.006
Pair 4	Total Post - Total Pre	23.4375	24.4594	6.1149	10.4040	36.4710	3.833	15	.002

Table 3: Paired Samples Test

Overall, this data indicates that the participants perceived that student engagement, teacher engagement, and organizational support with respect to technology-integrated instruction improved between the pre-survey and post-survey.

The correlation between the three variables was analyzed using the Pearson's correlation coefficient for each of the two pairs of variables. There was a significant correlation between organizational support and student engagement ($r = .79$), between organizational support and teacher engagement ($r = .86$), and between teacher engagement and student engagement ($r = .88$) in the pre-survey data. In the post-survey data, however, while there was still a significant correlation between teacher engagement and student engagement ($r = .78$), the correlation between organizational support and student engagement ($r = .10$) and organizational support and teacher engagement ($r = .25$) are no longer significant. (Significance tested at the .01 level, 2-tailed.)

The data indicates that before participating in QUEST, participants linked school leadership with technology engagement among teachers and students. After their QUEST experience, participants no longer perceived school leadership to be strongly linked to the use of technology by students and teachers.

Discussion

This study has a few limitations that are necessary to mention. Because of the small number of participants involved in the study, and, more importantly, the fact that they were not selected at random from a larger population, no inferences can fairly be made about teachers and administrators beyond the participant group. In

addition, the survey primarily focuses on “administrative” support, rather than the broader definition of school leadership used by QUEST. As a result, the definition used by the respondents when completing the survey may have been different than the definition of organizational support considered in this study, thus causing construct validity concerns.

In two cases, the pre-survey scores were higher or equal to the post-survey scores across all domains. It would seem, therefore, that participating in the QUEST program actually caused a decrease in student engagement, teacher engagement, and organizational support as perceived by these participants. In order to explore this phenomenon, a follow-up interview was conducted with one of these participants, applying a retrospective pre-test approach (RPT). In the interview, the participant was asked to retrospectively complete the pre-survey with the interviewer, then complete the post-survey from the perspective of her current teaching practice. These follow-up surveys indicated an increase from pre to post in all three domains.

As table 4 indicates, the most noticeable change in this data is that the pre-survey RPT interview scores are notably lower than the pre-survey scores. This indicates a change in her perception of the use of technology before her participation in QUEST. In hindsight, she now has the information necessary to realistically compare her previous level of engagement with her current skills and practice with regard to technology.

	Pre		Post	
	Survey	RPT Interview	Survey	RPT Interview
Student Engagement	24	13	19	24
Teacher Engagement	30	17	30	27
Organizational Support	55	44	45	53

Table 4: Survey and RPT Comparison

School leaders are included in the QUEST training in order to create a common vision for technology integration among building personnel and to provide administrative support for follow-up and implementation of the strategies learned in QUEST. It was anticipated, therefore, that there would be a strong correlation between organizational support and teacher and student engagement in both the pre and post survey data. Instead, the data indicate that there is little correlation between these domains in the post-survey. One explanation for this is that the QUEST experience is designed to empower teachers. As a result of this, it is possible that the organizational support is no longer perceived as a barrier to the use of technology in the classroom with students. It will take further research in order to determine the actual cause.

Conclusion

This study has raised several issues that will guide future evaluation efforts of the QUEST program. First, study sampling needs to be expanded to include more and randomly selected QUEST participants in order to create a study that can be generalizable beyond the QUEST program. Second, data collection methods can be expanded to include other measurements beyond self-report data. Third, the current survey can be modified, re-piloted, and checked for construct validity in order to provide a better match between the survey and the QUEST definition of building leaders. Finally, the role of leaders in QUEST needs to be explored further, perhaps through additional qualitative research, in order to examine the reasons why the correlation between organizational support and teacher and student engagement diminishes after QUEST participation.

References

Anderson, R.E., & Dexter, S. L. (2000). School technology leadership: Incidence and impact. Teaching, learning, and computing: 1998 National survey report #6. Available <http://www.crito.uci.edu/tlc/html/findings.html>

Becker, H., & Riel, M. (2000, April). The beliefs, practices, and computer use of teacher leaders. Paper presented at the American Educational Research Association, New Orleans, LA.

Costello, R. W. (1997). The leadership role in making the technology connection. *Technological Horizons in Education Journal*, 25(4), 58-61.

Darling-Hammond, L. & McLaughlin, M. W. (1995, April). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 76(8), pp. 597-604.

McKenzie, J. (1999). *How teachers learn technology best*. Bellingham, WA: FNO Press.

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