

# Chapter 21

## Access and Advancement: Teacher Transformation and Student Empowerment through Technology Mentoring

**Steven D'Agustino**  
*Fordham University, USA*

**Kathleen P. King**  
*University of Southern Florida, USA*

### ABSTRACT

*This research studied a professional development technology mentoring program serving approximately 500 K-12 teachers in New York City. The teacher training model, designed to improve student outcomes through the integration of technology into instruction, employed school visits by professional development technology mentors, training workshops and an online collaboration environment for participants. With a theoretical basis in transformative learning, the model focused on developing relationships of trust between teachers and professional developers. Findings in the paper discuss how to improve student performance in mathematics and English Language Arts through technology integration and teacher competence in teaching with technology, and they provide new insights into the potential for professional development initiatives incorporating similar perspectives and practices.*

### INTRODUCTION

With financial support from the Title IID Enhancing Education through Technology Grant (EETT), a large k-12 region in the New York City public school system and a major university's research center conducted a professional development project. This unique professional development initiative was designed to improve student learning and achievement by changing teacher practice

through technology-integration. By utilizing the requirements of the grant, the initiative targeted schools having high levels of low-income students and evidence of poor school performance, and was designed to assist students in accessing technology in instructional settings.

It is well documented through federally and privately funded research projects that the integration of technology lags behind expectations in historically underserved communities (Solomon, Allen & Resta, 2003; National Telecommunications and Information Administration (NTIA),

DOI: 10.4018/978-1-61692-854-4.ch021

1999, 2004). This grant project's funding stream and the resulting project were specifically designed to address the issues of promoting student technology literacy and increasing achievement in mathematics and English Language Arts.

The project is firmly grounded in research which demonstrates that technology integration is effective at improving student performance (Vannatta & Fordham, 2004; Schacter, 1999). Regarding the model of how to approach the professional development successfully, research by King (1998, 2003, 2005) served as the foundation as it revealed an effective model which supports teacher professional development in learning new technologies, overcoming fear and hesitancy in using technology, changing teacher practice and in effecting change in teacher's educational perspectives.

This initiative engaged 500 teachers in 7 different cycles or cohorts. (There were 55 in Cycle 1; 82 in Cycle 2; 103 in Cycle 3; 76 in Cycle 4; 83 in Cycle 5, 82 in Cycle 6, and 19 in Cycle 7). Across the three years of the project, all told 114 schools in Bronx New York were represented by these 500 teachers. This approach reveals that part of the design of the project was to expand the population of teachers and schools who participated in this professional development initiative over time. This strategy was used to promote, sustain and scale systemic change within the schools across the participating district.

Teachers were visited on a weekly basis for nine months by a professional developer and attended ten training sessions off-site. Research has shown that professional development can be effective in moving teachers toward greater technology integration (Bailey & Pownell, 1997; Ertner, Gopalakrishnan & Ross, 2000; Ross,) and that such training promotes the use of technology as both an instructional tool (Atkins, 2000; Casey & Rakes, 2002; Martin & Lundstrom, 1988; Smith, 1998) and a transformation of paradigms or perspectives of teaching (King, 2005; Jonassen, Howland, Mara, & Crismond, 2007).

Research conducted about this substantial opportunity to provide change in professional development model, perspectives and delivery across 114 schools afforded a rich source of data. The following research questions are the focus of this paper's discussion about the teacher change and technology-integration project

- To what extent does project participation improve the academic performance of students?
- To what extent does project participation improve students' technology literacy?
- To what extent does project participation increase teachers' integrated uses of technology for classroom instruction?

The objectives of the instructional technology professional development project were:

- Improve student achievement in math and ELA.
- Increase teacher use of technology in classrooms settings with students
- Increase student use of technology in classroom settings

## **THEORETICAL FRAMEWORK**

The funding agency's primary focus for this project of technology integration was increase to student technology literacy and improved student achievement. The theoretical basis for this work is in the field of adult learning, and more specifically transformative learning (King, 2002; Mezirow, 1978; 1990; Mezirow & Associates, 2000; O'Sullivan, 1999). Transformative learning is the theory of adult learning which emerged from the work of Jack Mezirow (1978) to explain the dramatic changes in worldview, paradigms and "meaning perspectives" among women returning to college. It is closely related to the work of Mezirow's contemporary Paulo Freire (1973,

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/access-advancement-teacher-transformation-student/47268](http://www.igi-global.com/chapter/access-advancement-teacher-transformation-student/47268)

## Related Content

---

### NASATalk as a Discovery Learning Space: Self-Discovery Learning Opportunities1

Debra C. Burkey Piecka, Laurie Ruberg, Christopher Ruckman and Dynae Fullwood (2012). *Constructing Self-Discovery Learning Spaces Online: Scaffolding and Decision Making Technologies* (pp. 49-71).

[www.irma-international.org/chapter/nasatalk-discovery-learning-space/61299](http://www.irma-international.org/chapter/nasatalk-discovery-learning-space/61299)

### Semantic Web Technologies in the Recruitmant Domain

Ralf Heese, Malgorzata Mochol and Radoslaw Oldakowski (2007). *Competencies in Organizational E-Learning: Concepts and Tools* (pp. 299-318).

[www.irma-international.org/chapter/semantic-web-technologies-recruitmant-domain/6759](http://www.irma-international.org/chapter/semantic-web-technologies-recruitmant-domain/6759)

### E-Learning at Politecnico di Torino: Moving to a Sustainable Large-Scale Multi-Channel System of Services

Salvatore Barbagallo, Roberto Bertonasco, Fulvio Corno, Laura Farinetti, Marco Mezzalama, Matteo Sonza Reorda and Enrico Venuto (2013). *Handbook of Research on Didactic Strategies and Technologies for Education: Incorporating Advancements* (pp. 690-702).

[www.irma-international.org/chapter/learning-politecnico-torino/72111](http://www.irma-international.org/chapter/learning-politecnico-torino/72111)

### The Magic Bullet: A Tool for Assessing and Evaluating Learning Potential in Games

Katrin Becker (2013). *Developments in Current Game-Based Learning Design and Deployment* (pp. 273-284).

[www.irma-international.org/chapter/magic-bullet-tool-assessing-evaluating/70202](http://www.irma-international.org/chapter/magic-bullet-tool-assessing-evaluating/70202)

### Computer Supported Network Based Learning Environment for the Workplace

Joze Rugelj (2003). *Usability Evaluation of Online Learning Programs* (pp. 254-271).

[www.irma-international.org/chapter/computer-supported-network-based-learning/30613](http://www.irma-international.org/chapter/computer-supported-network-based-learning/30613)