IMPROVING THE LITERACY OF YOUNG URBAN LEARNERS: CLOSING THE ACHIEVEMENT GAP

By

AGNES CAVE * FRANK R. YEKOVICH **

* Department of Education, The Catholic University of America.
** Ordinary Professor of Cognitive Psychology, The Catholic University of America.

ABSTRACT

The purpose of this paper is to demonstrate how the TRALE model (Technology-Rich Authentic Learning Environments) improved young urban learners' literacy skills. TRALE, designed as an early childhood education program, integrated authentic learning and the use of technology to increase disadvantaged children's literacy learning. The paper includes a description of how the model was implemented through the creation of a community of technology-enriched classrooms in an inner-city school context and provides student achievement data in language arts as evidence for TRALE's instructional effectiveness.

Keywords: Literacy, Language Arts, Achievement Gap, Urban Learners, Technology, Authentic Learning, Early Childhood Education.

PREFACE

"In a study of 20 'high income' countries, the US ranked 12th on literacy tests. Illiteracy has become such a serious problem in our country that 44 million adults are now unable to read a simple story to their child." (Education Portal, 2007). Statistics on illiteracy in the U.S. (based on data from the National Institute for Literacy, National Center for Adult Literacy, The Literacy Company, and the U.S. Census Bureau compiled by Education Portal) indicate that "50 percent of adults cannot read a book written at an eighth grade level, 20 percent of Americans are functionally illiterate and read below a 5th grade level, and nearly half of all Americans read so poorly that they cannot find a single piece of information when reading a short publication." Additional data point out that "3 out of 4 people on welfare can't read, 20 percent of Americans read below the level needed to earn a living wage, 50 percent of the unemployed people who fall between the ages of 16 and 21 cannot read well enough to be considered functionally literate, and between 46 and 51 percent of American adults have an income well below the individual threshold poverty level because of their inability to read." Social problems are also traced back to illiteracy as "3 out of 5 people in an American prison can't read, 85 percent of juvenile offenders have problems reading, and approximately 50 percent of Americans read so poorly that they are unable to perform simple tasks such as balancing a checkbook and reading prescription drug labels." The shocking news is that elementary students' reading scores are used by prisons to project the number of beds necessary in the future. Illiteracy also has grave consequences financially for the U.S. "Illiteracy costs American taxpayers an estimated $20 billion each year. Illiteracy has been proven to cause children to drop out of school. Dropouts cost our nation $240 billion in social service expenditures and lost tax revenues."

Introduction

Historically, the poor have comprised a disproportionately large percentage of our nation's illiterate, and this problem shows no signs of abating. Today, poverty and illiteracy continue to be highly correlated, and the inability to communicate effectively (i.e., read, write, speak, and listen) continues to be one of the largest educational and social problems facing our nation. To compound the problem, the emergence of technology is rapidly creating new forms of "computer literacy." If lack of access to "traditional" forms of literacy has created a severe problem for the poor, lack of access to computer literacy, which is essential for communicating, functioning, and producing in today's world, will create an even greater gap between

mainstream and marginalized citizens. Data indicate that access to technology in our schools is not equally distributed across high-socioeconomic status (SES) and low-SES schools (e.g., Sutton, 1991). In Sutton's analysis of technology availability within our nation's schools, she notes that during the past three decades, the availability and use of technology in schools has increased dramatically. However, during that same period the technology gap between those schools educating children of poverty and those educating children from the middle and upper-middle classes has grown, and this trend has become even more pronounced in elementary schools. Further contributing to this growing chasm is the general belief that older rather than younger-age elementary children profit from technology use. This belief is evidenced repeatedly in urban elementary schools where the state-of-the-art technology (at least what there is of it) resides in upper grade classrooms and laboratories, while the older, donated, or otherwise throw-away technology funnels down for use into the earlier grades. In short, because of the compounding effects of low literacy, lack of access to technology, and the low priority of adequate technology in the early childhood grades, young poor children attending today's inner-city elementary schools are increasingly at risk in their ability to become competent, functioning citizens.

One critical component of systemic reform in early childhood education is the design and implementation of effective, responsive instructional programs that meet the needs of young children in urban environments. The stated goal of TRALE (Technology-Rich Authentic Learning Environments) was to improve the literacy skills of young urban children through the creation of technology-enriched classroom environments. As an applied research project, TRALE had two objectives. Having assumed that children in urban schools have normal cognitive competencies, the principal investigators (PIs) designed this project to understand the reasons for these children's low levels of achievement on annual standardized tests used almost exclusively as the criterion for determining student success. Having gained some understanding of the variables that produced this overall low level of performance, the PIs altered the children's learning environments to make their learning more effective and promote higher achievement on these tests. In practice, TRALE worked toward these two objectives simultaneously. One goal was to uncover variables that contributed to the children's low performance levels, and this work proceeded as applied research that got built into the ongoing routine of schooling. The second goal was to use these and other research results to improve existing instructional practice. This work took the form of professional development and collaborative interactions with the teachers and administrative staff who participated in the project.

This paper is comprised of two major sections: a description of TRALE followed by the student achievement data to substantiate the claim for TRALE's effectiveness in teaching language arts. The description of the program is divided into three parts: first, the paper provides an abbreviated theoretical rationale upon which TRALE rests, second, a concrete instantiation of the TRALE framework is described, and finally, the implementation of TRALE is summarized.

The TRALE Project and Its Description

This section describes the school, the children, and the political climate that affected the evolution and degree of implementation of TRALE. Subsequently, a brief history of TRALE's development is provided. Walker and Yekovich (1998, 1999) describe TRALE and its evolution in more detail.

The School, The Children, and The Climate

TRALE was implemented in early childhood education classrooms in one urban elementary school (called *Target*) in a Mid-Atlantic city. Target Elementary is located in an area of high poverty, high crime, and rampant drug use. The school is located in an environment that is characterized by a lack of a thriving and varied community. The school's environment is basically literacy barren.

The student population during the existence of the project was 100% African American. Over 97% of the children qualified for free breakfast and/or lunch. About 90% of the students lived in the public housing complexes, which immediately surrounded the school. The large majority of children came from single-parent families or resided with relatives. The instability of the home environment, coupled

with high poverty, created a great deal of variability in the importance placed on literacy within the home. These conditions also produced variability in the children's general readiness for school, especially with respect to academic, social, and motivational readiness. Not surprisingly, the children who attended Target tended to have behavioral difficulties and low levels of motivation to succeed academically. The high incidence of poverty produced substantial transience and was also related to the high truancy and dropout rates at the school. In short, the target population consisted of young, poor, urban minority children who were at high risk of educational failure.

The context in which TRALE was implemented cannot be described as one that wholeheartedly promoted and supported new educational initiatives. Several obstacles hindered TRALE's evolution into a successful project. One of the many sources of frustration affecting TRALE's implementation originated from the school district itself. The actions of the executive officers stressed the system to a great extent and heightened the levels of fear and distrust among teachers and administrators within the schools.

Target Elementary was identified as one of the 20 lowest performing schools within the school district. When standardized test scores confirmed Target as the lowest performing school in reading and mathematics, the school was mandated to adopt a whole school reform model called the Adaptive Learning Environments Model (ALEM) created at Temple University. The introduction of ALEM, to be co-implemented with TRALE, created additional tensions at the school and in fact made the implementation of TRALE more challenging.

For years the early childhood grades were operating without a standard reading and math curriculum and little attention was paid to the alignment of curricular components with expected performance and formal assessment. In subsequent years teachers were expected to use the Houghton-Mifflin reading and math series that the state had adopted and purchased. The long-standing lack of alignment between the curriculum and assessment practices, coupled with the abrupt mandate to completely embrace and implement a poorly understood but new curriculum resulted in even more obstacles in the implementation of the TRALE project.

A Brief History of TRALE

The TRALE team's involvement with Target started when the Principal Investigators (PI) began volunteering at Target as tutors. From very early on, the PIs were struck by a paradox. Observations of the young children in informal, natural settings clearly showed them to be competent, motivated problem solvers and capable "information processors" (see Gagne, Yekovich, & Yekovich, 1993). Yet, equally clear was the observation that formal assessment of these children, especially when based on standardized tests, showed significantly lower performance. Why did young children who appeared to be cognitively competent in many informal settings fail to master formal cognitive skills and display the competence they had on formal, standardized tests? This question pushed the project forward and provided a context for creating an early childhood education program that more closely met the young children's needs in this urban school context. The next section describes TRALE's implementation.

A Description of TRALE and Its Implementation

What is TRALE? In essence TRALE is a principled framework for designing meaningful instruction for children. Meaningful instruction is created through the use of authentic, problem-based learning activities, and when appropriate, technology is utilized as a tool in the activities. So, for example, children may learn to alphabetize by creating an inventory list for their classroom store, and once the list is made, it may become a computerized spreadsheet that is used for real inventory and accounting purposes.

At Target Elementary, TRALE was implemented as a community consisting of businesses and organizations. Each classroom took up a role (e.g., a store, newspaper, theater, etc.). and all the classrooms worked together as they used their own and each other's services. For instance, kindergarten actors (who couldn't read yet) performed in the theater, rented movies from the video store, went shopping to the store (and obtained help from 3rd grade shopping assistants), and listened to older students as they

were reading the school newspaper out loud for them. The community thrived (and students learned) through interacting within their classroom and across classes within the community. In other words, TRALE afforded the framework for activities that were based on the curriculum and standards of the school district and provided the cornerstone for children's meaningful learning (see Walker & Yekovich, 1999).

The underpinnings of TRALE draw heavily from research in cognitive science, cognitive development, and sociocultural theory. Before describing a concrete instantiation of TRALE, a brief overview of the project's underlying theoretical assumptions follows in the next section that also includes the identification of five critical characteristics that a TRALE instructional setting possesses.

Theoretical Underpinnings

TRALE's approach to the teaching of literacy (i.e., reading and writing) has its roots in cognitive science (e.g., Anderson, 1987, 1993). Reading and writing, like all cognitive activities, are essentially problem-solving in nature and are best acquired in problem-based learning environments (see Anderson, 1995, p. 221). Like other complex cognitive skills, people develop expertise in reading and writing, and the course of that development parallels in many important ways the development of other types of cognitive competence (Scardamalia & Bereiter, 1991). Similarly, just as experts in general rely on both automated and conscious skill components, expert readers and writers automate some parts of skills and retain other parts as conscious strategies (Just & Carpenter, 1987).

At the same time, TRALE is also based on the assumption that sociocognitive and sociocultural factors have a large impact on the organization and content of one's declarative and procedural knowledge (See Langer, 1987; Vygotsky, 1987). Since thought and action are functions of one's knowledge base, the social contexts that house the experiences of individuals directly shape the nature of a person's thoughts and actions. In this sense, one's cognitions are situated within particular social contexts.

TRALE's Characteristics

TRALE is characterized by five critical dimensions, such as Goal Directedness, Authenticity (i.e., Contextualized Learning), and Community (or Shared Responsibility). Because of TRALE's special interests in young school-age children and in technology, the model includes two additional critical dimensions, i.e., Multiple Modes of Expression and Representation that is related to literacy development, and the Use of Technology.

Goal-Directedness refers to the idea that human thoughts and actions have a purpose. One function a teacher or mentor serves is to help young children, often novices, see the goal – subgoal relations in real-world problems. It is critical for problem solvers (even young children) to know the goal of what they are doing and to understand how their current activity contributes to the achievement of that goal. If they have this understanding, their current task or activity makes sense to them – that is, the children see how the current "piece" fits into the big picture.

Authenticity refers to the idea that the activities in a classroom are contextualized or situated in such a way that the students have some meaningful prior knowledge and experience they can use when they attempt to understand new concepts and solve new problems. For example, simulating a store in a classroom provides a familiar, meaningful, and authentic context for a child because of the child's prior knowledge and experiences with neighborhood stores. Thus, alphabetizing a list of inventory items becomes "real." The task is authentic.

Shared Responsibility refers to the social nature of learning and provides a motivation for learning. The concept of a TRALE community attempts to capitalize on a primary human social need, namely that people want and need to be legitimate, contributing members of a group. The incentive to belong is utilized as a motivation for wanting to learn academic skills because one major way to be a legitimate, respected group member within TRALE classrooms and the community is to make academic contributions ("disguised" as TRALE activities) to the achievement of group goals.

The fourth critical dimension is Multiple Modes of Expression and Representation. Because initially young children are constrained in the ways in which they can understand and communicate meaning-making events (e.g.,

kindergartners cannot read and/or write yet), their meaningful expression can be allowed to take other forms (e.g., drawing, acting, and singing) in addition to conventional forms like reading and writing. Similarly, instruction should provide multisensory opportunities for acquiring literacy skills so that children can develop enriched representations of their worlds. As children develop, they become more able to express their ideas in standard or formal ways, and so the progression through the TRALE program from kindergarten to third grade requires increasingly formal and standardized expressions of ideas (e.g., by the time a child is in third grade, she is expected to help edit and publish a newspaper where more standard, formal means of communication and expression are required).

TRALE's fifth and final critical dimension is the Use of Technology because

- multimedia technology is an efficient delivery system for multisensory input, so it encourages the development of multiple modes of expression and representation;
- technology engages young children for long periods of time providing the practice they need to develop automated basic skills;
- technology encourages children to work together to solve problems promoting shared responsibility;
- technology provides structure and scaffolding (e.g., pull-down menus) that enable children to build goal-directed mental representations as they are working and solving problems;
- well designed and pedagogically sound multimedia software programs allow young children to concentrate on higher level skills (e.g., constructing a meaningful message) while the computer takes over some parts of a resource consuming task (e.g., the computer puts the letters on the screen while the children concentrate on what they want to write),
- technology can provide opportunities for children to practice small, prescribed sets of cognitive activities in motivating contexts, and
- with the increasing importance of computer literacy in today's world, young children should have as much access as possible to the tools they will be expected to use in the future.

TRALE's Implementation

This section details how TRALE was conceptualized and implemented from its pilot implementation until Year 5. As mentioned before, TRALE has two delivery components, a technology component and an element dealing with authentic learning activities. In the following paragraphs, each component is described briefly. A more detailed description is provided by Walker & Yekovich (1998).

TRALE's Technology Infrastructure

Each participating classroom was equipped with several Apple computers with internet access and peripheral devices, such as a printer, a digital camera, a scanner, and headphones. Grade-level appropriate software packages allowed the children to develop their basic skills, such as reading, writing and math by providing spreadsheets, word processing and letter-sound matching activities, multimedia books and games, typing skills, interactive story writing and reading, word recognition activities, reading comprehension, phonics, and spelling. Other software was used for drawing, image editing, painting, coloring, scanning, block art, and games, such as checkers.

The students used technology both in their skill development embedded in classroom activities as well as in community activities when they interacted (and learned together) with children from other classes. This aspect of the community learning is explored and described in more depth by (Cave, Yekovich, & Walker, 2010).

Creating Authentic Literacy Environments: The Community

The concepts of meaningfulness and authenticity entail the creation of classroom contexts in which the opportunities for acquiring literacy skills simulate situations based on the children's out-of-school life experiences. Thus, each classroom in the project simulated a specific organization that the children had experiences with, such as a general store or a post office.

This article focuses on young students' performance in language arts. Just like most of the curriculum, the

language arts component of the curriculum was designed using problem-based situations that were intimately tied to each specific classroom role. For instance, the 3rd grade journalists were responsible for all operations, functions, and activities related to publishing the school newspaper. In order to achieve their goals, they had to engage in standard-based literacy activities most of the time every day. For example, the young writers contacted potential interviewees with initial questions, brainstormed about and created interview protocols with appropriate questions, took notes while conducting the interviews, transcribed their notes on the computer, edited their papers in groups, and prepared the layouts. The language arts content standards were easy to cover as the authentic publishing activity naturally related to reading and writing skills. Some of the standards that the activities supported were the following:

- Follow agreed-upon rules for class discussion and carry out assigned roles in self-run small group discussions, including posing relevant questions and building on the ideas of others,
- Retell and paraphrase information shared orally by others,
- Respond to questions with appropriate elaboration and detail (e.g., explain, amplify, expend),
- Identify the purpose or main point and supporting details in text,
- Identify the facts given in a text, and
- Write stories that have a beginning, middle, and end and contain details of setting and characters.

The publishing activities oftentimes pushed students to go beyond 3rd grade expectations, as it was not sufficient in some situations to be able to only identify certain parts of a written text (e.g., purpose, main point, supporting details), but the students were supposed to write their own text and critique others' work also.

All classrooms were set up in a fashion similar to the Newsroom: they all had a specific goal, problem-based activities that related to the classroom's function in the community, and technology to be used in accomplishing all literacy tasks. Learning occurred both inside the classroom and within the community. Oftentimes children practiced individual skills (e.g., conducting an interview) in their own classrooms before they attempted to utilize their newly acquired skills in another classroom. The interactive nature of learning was employed when classes were scheduled for community events, e.g., the journalists viewed a theatrical performance presented by the kindergarteners and wrote their critique in the school newspaper, or when the artists read the latest issue of the school newspaper. The essence of all these events was the improvement of skills in academic areas – later to be tested by standardized achievement tests.

In sum, the teaching-learning process occurred in a meaningful way supported by technology. The problem-based activities were the foundation for learning where

- interaction varied (both teacher-student and student-student),
- scaffolding was used to expose problem structures and teach problem-solving strategies,
- the learning environment evolved to meet the children's increasingly elaborate processing capabilities, and
- the nature and purpose of each classroom role provided the overarching goal and motivation for the children to learn knowledge and skills.

Though the purpose of the project was to create meaningful learning opportunities for the children, for which anecdotal evidence was abundant, the other essential goal was to increase students' achievement scores on the school district's standardized test. The second major part of this paper provides student standardized test data to demonstrate TRALE's effectiveness as an instructional paradigm in a low-performing school.

The Instructional Effectiveness of TRALE

Throughout TRALE's implementation, student achievement data were systematically gathered from both formal (standardized test scores) and informal sources (writing samples, videotaped reading samples, alternative assessments of early reading skills, etc.); however, the ultimate test of the effectiveness of any instructional intervention today is whether it improves student

performance. Thus the main data source in this study is student achievement in language arts as measured by standardized tests.

When TRALE was designed and first implemented in Target Elementary, its main goal was to increase student achievement significantly in its third year of implementation after its pilot. There are three reasons why TRALE was not expected to produce marked changes in student performance during the first two years of implementation following the pilot: (i) According to research, new programs on average are expected to increase students' test scores significantly only after two years of full implementation, (ii) TRALE's implementation was always delayed due to unfavorable conditions at the beginning of each school year, and (iii) the selected group of teachers' participation in TRALE was first voluntary and became obligatory beginning only in the 4th and 5th project years.

No matter how ingenious an educational invention, program, or project may be, it can produce significant changes in academic progress only when it is fully and consistently implemented to a high degree. In order to make a dramatic difference in students' achievement, TRALE had to be highly implemented. Thus, the teachers were categorized according to their degrees of implementation. During the first three years of the project including the pilot year, teachers' degree of program implementation was assessed according to a complex system including (1) the project coordinator's observations and her anecdotal evaluation of classroom roles, (2) teachers' meeting attendance, (3) number of teacher journal entries submitted, (4) quality of teacher journal entries, and (5) the number of planned community activities and events accomplished. At the end of the 3rd year, the project team devised a 118-item instrument called the Degrees of Implementation for the TRALE project (TRALE DOI) in order to formally assess program implementation. The TRALE DOI data using this new instrument became available in the 4th year. From that point on, it was more feasible to account for student growth knowing each teacher's implementation profile. The next section includes data analyses from each project year.

Student Achievement in the Pilot Year

In the pilot year Grade Equivalent Scores (GES) were used to report student achievement data. GES measures gauge "growth within student" by indicating a student's grade level year and month of achievement. For instance, a score of 2.1 means that a student is working at a second grade level in the first month of school. If a student's score changes from 2.1 to 2.6 in a 5-month period, one can infer that the student is progressing at a normal rate. "Within student" measures remove random differences of no particular interest (e.g., differences in ability between classes) and provide a more reliable gauge of change within an individual over time.

As published in an earlier paper (Cave, Yekovich, & Walker, 2010) during the pilot implementation of the program the 2nd graders made significant gains in language arts from Year 1 to Year 2 as measured by GES on the state's standardized achievement test. Gains in the 2nd grade project class were tenfold in vocabulary (project class = .74, non-project = .07) and language expression (project class = .7, non-project = .07) whereas gains were threefold in reading comprehension (project class = 1.01, non-project = .36) using Grade Equivalent Scores.

Gains in the 3rd grade classes were challenging to measure due to reliability problems with pretest data, however, it was confirmed that the 3rd grade project class made a one-year gain in language mechanics (project class = 3.5, non-project = 2.5) using GES and showed overall improved performance in reading, spelling, and language total.

Student Achievement across Second and Third Years

All the teachers were divided up into three groups: (1) high implementing TRALE teachers, (2) low implementing TRALE teachers, and (3) non-project teachers. It was assumed that students' achievement would be significantly higher in the high implementing teachers' classes compared to low implementing and non-project teachers' classes. In these two school years there were four high implementing, four low implementing, and seven non-project teachers. In each year TRALE was implemented, the size of the school allowed for at least one TRALE and one non-TRALE classroom on each grade level. However, complete and reliable data were not available all the classes.

Kindergarten teachers were excluded from this analysis for kindergartners were not tested by the state's standardized test. In the 2nd and 3rd years of the project the subtests reported by the state were different from the ones reported in the first year. Thus, the total reading scores were analyzed. Table 1 displays student achievement scores in (i) high implementing, (ii) low implementing, and (iii) non-project teachers' classes.

As the state changed the reporting format of student achievement data from GES to Normal Curve Equivalent (NCE) scores, the data analyses in this study also included NCE scores from this year on. The NCE format with its percentile-like rankings allowed for meaningful analyses of growth from fall to spring and comparisons to the national norms. Table 1 indicates the students' total reading scores in an NCE format as well as the average in each group of high implementing, low implementing, and non-project teachers.

The data analyses revealed several noteworthy results. First, the degree of program implementation was clearly related to growth in the students' total reading scores. Average growth in students' total reading scores in the high implementing teachers' classes was tenfold compared to low implementing teachers' classes and sevenfold compared to non-project teachers' classes.

Second, students in the high implementing teachers' classes seemed to begin the school year at a lower reading level (21st %tile) when compared to children in the low implementing (29th %tile) and non-project (28th %tile) classes. However, by the end of the year, children with lower NCE reading scores at the beginning of the year slightly outperformed those children who started the year in a better position.

In sum, even though TRALE was not expected to increase achievement scores on the standardized tests during the first three years of its existence, it was a successful project in doing so even in the first year of its pilot implementation and every school year thereafter. Students' standardized test scores indicated that TRALE - when highly implemented - significantly increased student achievement.

Student Achievement in the Fourth Year

Similarly to analyses in the previous school years, the student achievement data were analyzed by dividing up all the teachers in 1st, 2nd, and 3rd grades according to their degrees of implementation of TRALE. Again, the kindergarten teachers were not included in the analysis because the standardized test was not administered to

Group of Classes According to Degrees of Implementation	Project Year	Total Reading Fall Semester and Average in Group	Total Reading Spring Semester and Average in Group	Growth in NCE Points	Average Amount of Growth in NCE Points across Classes in Each Group
High Implementing Teachers					
Teacher 11	Year 2	22.8	24.6	1.8	
Teacher 11	Year 3	21.2	37.5	16.3	10.9
Teacher 2	Year 2	19.9	31.0	11.1	
Teacher 12	Year 3	21.2	35.6	14.4	
		21.3	**32.2**		
Low Implementing Teachers					
Teacher 2	Year 3	26.8	30.0	3.2	
Teacher 3	Year 2	37.2	24.2	**-12.9**	
Teacher 3	Year 3	30.4	37.6	7.2	1.1
Teacher 9	Year 3	20.8	27.8	7.0	
		28.8	**29.9**		
Non-Project Teachers					
2nd grade (A)	Year 2	21.1	20.4	**-.7**	
2nd grade (A)	Year 3	21.2	33.6	12.4	
2nd grade (B)	Year 2	22.8	22.1	**-.7**	
2nd grade (B)	Year 3	29.1	37.4	8.3	2.7
1nd grade (A)	Year 2	32.5	25.8	**-7.2**	
1nd grade (A)	Year 3	31.0	42.6	11.6	
1ndgrade (B)	Year 2	39.5	34.5	**-5.0**	
		28.2	**30.9**		

Table 1. Growth in Students' Total Reading Scores on the State's Standardized Achievement Test in 6 Months in Each Teacher's Class and Average of Growth in the Total Reading across Classes in the 3 Groups of Varying Degrees of Implementation

Group of Classes According to Degrees of TRALE Implementation	Project Year	Grade Year	Total Reading fall Semester and Average in Group	Total Reading Spring Semester and Average in Group	Growth in NCE Points	Average Amount of Growth in NCE Points across Classes in Each Group
Medium Implementing Teachers						
Teacher 2	Year 4	3	40.11	38.80	-1.31	
Teacher 8	Year 4	2	28.48	37.08	8.6	3.64
			34.29	37.94	7.29	
Low Implementing Teachers						
Teachers						
Teacher 3	Year 4	1	.	43.69	.	
Teacher 6	Year 4	1	36.12	52.16	16.04	
Teacher 9	Year 4	1	25.92	44.63	18.71	3.44
Teacher 4	Year 4	2	31.00	51.75	21.75	
Teacher 7	Year 4	3	34.55	33.17	-1.38	
			31.89	45.08	13.78	

Table 2. Comparison among Medium and Low Implementing Teachers in Terms of Average Amount of Change from the Beginning to the End of the Fourth Year on Each Grade Level on the Standardized Achievement Test Using Normal Curve Equivalents (NCEs)

kindergartners. Unfortunately, Target did not have any high implementing TRALE teachers in the fourth school year. Table 2 displays student achievement scores in (i) medium and (ii) low implementing teachers' classes.

Because the total reading scores were reported in NCE format, just like in previous years' analyses, they were used again to calculate growth in this academic year. Table 2 indicates the average amount of growth in students' total reading scores in an NCE format as well as the average in each group of medium and low implementing teachers.

The data analyses disclosed some unexpected results in an interesting pattern. First, the data indicated that degree of implementation was not clearly related to students' total reading scores on the standardized test. In one of the medium implementers' classroom the students' growth was substantial (from the 28th %tile to the 37th %tile); however, the growth in the other medium implementing teacher's classroom was not observable. This was the most surprising part of the analysis since this "veteran TRALE teacher" always had very observable growth patterns in her classroom as measured on standardized tests. Second, even though students in the low implementing teachers' classes seemed to begin the school year at a lower reading level (31st %tile on average) when compared to children in the medium implementing teachers' classes (34th %tile), by the end of the year these children in most low implementing teachers' classes outperformed children in the medium implementing teachers' classes as measured by the standardized test. In other words, growth in most of the low implementing teachers' classes was more prevalent than in the medium implementing teachers' classes using standardized achievement test scores. However, the average amount of growth across classes in the 2 groups showed the same amount of gain (3.64 in NCE points for the medium implementing teachers and 3.44 in NCE points for the low implementing teachers).

Table 3 demonstrates how the percentage of the students were categorized according to performance standard levels, such as below basic=bb, basic=b, proficient=p, and advanced=a.

Since performance standard levels were not assigned to 1st graders during the fall administration of the standardized test, change in terms of performance standard levels could not be calculated for 1st grade students. The data on performance standard levels in the 2nd and 3rd grade classes indicated that compared to low implementing teachers, medium implementing teachers were less successful in moving children out of the below basic category by the end of the year. Also the medium implementing teachers had more children moving to lower performance standard levels as the end of the year approached.

As stated at the beginning of this paper, TRALE was expected to produce significant changes in students'

Group of Classes According to Degrees of TRALE Implementation	Project Year	Grade Level	Performance Standards in % of Students in Each Category Fall Semester				Performance Standards in % of Students in Each Category Spring Semester				Change in % of Students in Various Categories using Performance Indicators			
Medium Implementing Teachers			bb	b	p	a	bb	b	p	a	bb	b	p	a
Teacher 2	Year 4	3	25.0	56.3	18.7	0.0	52.9	29.4	17.7	0.0	**27.9**	**-26.9**	**-1.0**	**0.0**
Teacher 8	Year 4	2	33.3	55.6	11.1	0.0	50.0	38.8	5.6	5.6	**16.7**	**-16.8**	**-5.5**	**0.0**
Low Implementing Teachers			bb	b	p	a	bb	b	p	a	bb	b	p	a
Teachers														
Teacher 3	Year 4	1	-	-	-	-	20.0	50.0	30.0	0.0	-	-	-	-
Teacher 6	Year 4	1	-	-	-	-	0.0	69.2	30.8	0.0	-	-	-	-
Teacher 9	Year 4	1	-	-	-	-	14.3	64.3	21.4	0.0	-	-	-	-
Teacher 4	Year 4	2	9.1	77.3	13.6	0.0	9.1	68.2	22.7	0.0	0.0	-9.1	9.1	0.0
Teacher 7	Year 4	3	50.0	27.8	22.2	0.0	55.6	27.8	16.6	0.0	5.6	0.0	-5.6	0.0

*Note: Instruction is considered successful if (1) the Change number is negative in the below basic category from the fall to the spring semester, which means that the % of students decreased in the below basic category from the fall to the spring semester and (2) simultaneously if the Change number is positive in the below and proficient categories from the fall to the spring semester, which means that the % of students increased in those categories.

Table 3. Comparison among Medium and Low Implementing Teachers in Terms of Average Amount of Change from the Beginning to the End of the Fourth Year on Each Grade level on the State's Standardized Achievement Test based on the % of Students in Various Categories Using Performance Indicators

performance in the fourth school year. Because in the past there were reasons for concern about the reliability of the data gathered by the standardized tests at Target, an alternative method of assessment was conducted in a 3rd grade classroom in order to determine whether the technology-rich authentic learning environment indeed improved young urban children's literacy more than the traditional literacy instruction (Cave, Yekovich, & Walker, 2010). More specifically, the goal of that study was to determine whether there were any qualitative and/or quantitative differences in essays written by the 3rd grade students in the TRALE Newsroom and a control class. The prose analysis method used in the study allowed for examining the deep structure of each text and provided a detailed analysis of students' writing on macro and micro levels simultaneously. Data on the children's organizational, paragraph-level thinking in their writing indicated that the TRALE students produced longer essays, organized and connected their essays more successfully on local and global levels, and composed more complex and goal-directed essays. This tendency continued throughout the school year, and the difference between the two classes' performance became wider on all variables.

This extensive study provided sound evidence for TRALE's effectiveness on children's literacy development that was not captured by standardized tests either due to the nature of standardized tests or the unreliability of test scores in particular classes. For a more complete analysis of TRALE's effect on students' writing, see (Cave, Yekovich, & Walker, 2010).

Student Achievement in the Fifth Year

In order to be consistent with previous years' analyses, growth analyses continued to utilize NCE formats to explore students' reading achievement in the fifth year. Similarly to the fourth year, degrees of implementation data were used to categorize teachers into three groups of program implementation. Again, the kindergarten teachers were not included in the analysis because the state's standardized test was not administered to kindergartners. In the fifth year there were 1 high, 2 medium, and 3 low implementing teachers at Target. There was also one teacher who began the school year after September and thus was not involved in implementing TRALE (non-project teacher). Table 4 displays student achievement scores in (i) high implementing, (ii) medium implementing, (iii) low implementing, and (iv) non-project teachers' classes. More specifically, Table 4 indicates students' total reading scores in an NCE format as well as the average in each group of high, medium, low implementing and non-project teachers' classes.

Data analyses revealed some very interesting results. First, the data indicated that degree of implementation was not

Group of Classes According to Degrees of TRALE Implementation	Project Year	Grade Level	Total Reading Fall Semester and Average in Group	Total Reading Spring Semester and Average in Group	Growth points in NCE	Average Amount of Growth in NCE Points across Classes in Each Group
High Implementing Teachers						
Teacher 10	Year 5	2	28.24	30.91	2.67	2.67
			28.24	**30.91**	**2.67**	
Medium Implementing Teachers						
Teacher 9	Year 5	1	28.08	60.63	32.55	
Teacher 7	Year 5	3	35.27	55.44	20.17	13.18
			31.67	**58.03**	**26.36**	
Low Implementing Teachers						
Teacher 6	Year 5	1	45.64	50.87	5.23	2.98
Teacher 11	Year 5	2	25.56	34.13	8.57	
Teacher 4	Year 5	3	34.87	47.92	13.05	
			35.35	**44.30**	**8.95**	
Non-Project Teachers						
Teacher 12	Year 5	2	23.52	41.51	17.99	17.99
			23.52	**41.51**	**17.99**	

Table 4. Comparison among High, Medium and Low Implementing Teachers as well as Non-Project Teachers in Terms of Average Amount of Change from the Beginning to the End of the Fifth Year on Each Grade Level on the State's Standardized Achievement Test Using Normal Curve Equivalents (NCEs)

consistently related to students' total reading scores on the standardized test. Growth in student achievement in the highest implementing teacher's class (2.67 NCE points) occurred to a much lower degree than in medium implementing or non-project teachers' classes (13.18 NCE points and 17.99 NCE points respectively). According to the standardized test scores, medium implementing teachers were more successful in supporting student progress in reading than the high implementing or low implementing teachers whose students showed similar growth patterns (2.67 NCE points and 2.98 NCE points respectively). The fifth year student achievement data showed that the non-project teacher who was hired later in fall of the fifth year and was also a novice teacher produced the most growth in student reading. In this school year concerns about the reliability of student achievement data continued to exist.

Table 5 demonstrates how the percentage of the students was categorized according to performance standard levels, such as below basic (bb), basic (b), proficient (p), and advanced (a). Since performance standard levels were not assigned to 1st graders during the fall administration of the standardized test, change in terms of performance standard levels was not calculated for 1st grade students. The data on performance standard levels in the 2nd and 3rdgrade classes indicated that the novice, non-project teacher was the most successful in moving children up from the below basic category. Almost 20% of her children moved out from the below basic category, more than 8% of her children moved to below, and more than 11% of her children became proficient from October when she was hired to April when the standardized test was administered to the children. Again, the reliability of the data is dubious. The data on performance standard levels also showed that second to the non-project teacher, the 3rd grade medium implementing teacher (since the other medium implementing teacher had no performance level data on her children in first grade) was more successful than the high and low implementing teachers in moving children upward to higher proficiency levels. The medium implementing teacher moved more than 11% of her children out of the below basic category, and almost all of her other children moved to proficient (47.6%) or advanced (19.0%) levels. Student achievement data in one of the two low implementing teachers' classes exhibited an interesting pattern. The 3rd grade low implementing teacher, similarly to the medium implementing teacher, moved almost half of her children to the proficient reading level, which resulted in a more than 60% reduction of number of students in the below category.

In sum, the fifth year brought mixed results. TRALE was expected to result in a substantial increase in student

Group of Classes According to Degrees of TRALE Implementation	Project Year	Grade Level	Performance Standards in % of Students in Each Category Fall Semester				Performance Standards in % of Students in Each Category Spring Semester				Change in % of Students in Various Categories using Performance Indicators			
High Implementing Teachers	Year 5	2	bb	b	p	a	bb	b	p	a	bb	b	p	a
Teacher 10			36.4	36.4	27.2	0.0	69.0	25.0	6.0	0.0	32.6	-11.4	-21.2	0.0
Medium Implementing Teachers	Year 5		bb	b	p	a	bb	b	p	a	bb	b	p	a
Teacher 9		1	-	-	-	-	42.0	42.0	16.0	0.0	-	-	-	-
Teacher 7		3	35.0	45.0	0.0	0.0	23.8	9.5	47.6	19.0	-11.2	-35.5	47.6	19.0
Low Implementing Teachers	Year 5	1	bb	b	p	a	bb	b	p	a	bb	b	p	a
Teacher 6			-	-	-	-	5.9	64.7	29.4	0.0	-	-	-	-
Teacher 11		2	38.5	53.8	7.7	0.0	46.1	53.9	0.0	0.0	7.6	.1	-7.7	0.0
Teacher 4		3	22.2	72.2	5.6	0.0	37.0	10.5	52.6	0.0	14.8	-61.7	47.0	0.0
Non-Project Teachers	Year 5	2	bb	b	p	a	bb	b	p	a	bb	b	p	a
Teacher 12			47.0	53.0	0.0	0.0	27.8	61.1	11.1	0.0	-19.2	8.1	11.1	0.0

*Note: Instruction is considered successful if (1) the Change number is negative in the below basic category from the fall to the spring semester, which means that the % of students decreased in the below basic category from the fall to the spring semester and (2) simultaneously if the Change number is positive in the below and proficient categories from the fall to the spring semester, which means that the % of students increased in those categories.

Table 5. Comparison among High, Medium and Low Implementing Teachers as well as Non-Project Teachers in Terms of Average Amount of Change from the Beginning to the End of the Fifth Year on Each Grade Level on the State Standardized Achievement Test Based on the % of Students in Various Categories using Performance Indicators

achievement as measured by the state's standardized test; however, the data indicated that (I) growth in a novice, non-project teacher's classroom was the most substantial and (ii) when compared to high or low implementing teachers, medium implementing teachers on average were more successful in raising student achievement. The results of this analysis were not completely surprising. Every data analysis is conducted on data that are provided to researchers. If data are contaminated, the analysis will be affected.

Lessons Learned

TRALE's history at Target was nothing but adventurous. TRALE's ability to impact K-3 learning was demonstrated in highly implementing teachers' classes during the initial implementation of the program. Project faculty learned invaluable lessons regarding the implementation of a program in a context that was not always conducive to teaching, learning, and innovations. It is hoped that some of the lessons and insights gained by this project's staff assist others who wish to put into operation programs to increase student learning in urban school districts.

Some of these lessons include the realization that no matter how innovative a research-based early childhood program may be, top-down programs, mandated by school districts do take priority and impact the time, resources, and efforts teachers are able to devote (regardless of their effectiveness). Little grass-roots efforts in the form of a partnership between a university and a local school increase volunteer teachers' ownership and support, but external forces play a larger role in determining which program gets implemented. Many barriers from external (and internal) sources may appear – including leadership at the school, district, and federal levels. If administration does not formally support the introduction and maintenance of a program, chances for success are little in the long run. The best course of action would include a plan for communicating and collaborating with not only the school principal, but the teachers' union, bureaucratic school districts, and coordinators of other programs that may be mandated by the school district.

Another lesson is that teachers who volunteer for a program have a better ownership and seek out opportunities to increase program implementation. They need extensive support, which can be provided by one or more full-time program coordinators who are at the teachers' disposal at all times. After the pilot, program coordinators can decrease the amount of help depending on how independent teachers are and how well they understand

the principles of the new program. Degrees of program implementation, standardized student achievement as well as anecdotal data may inform program coordinators about how much to scaffold each teacher in her implementation. Even if program support is reduced, many teachers may need emotional support, which means visits to the classroom and opportunities to discuss learning events and their effectiveness.

Getting support from the school leadership as well as the community is certainly helpful and increases the chances of parental involvement. Parents who are invited to participate in regular community events that are meaningful for both their children and themselves feel more connected and can support learning at home more efficiently.

Conclusion

Teaching is hard in urban America. Besides the lack of resources, teachers are supposed (mandated) to implement more than one program forced on them oftentimes haphazardly. No matter how good or how well supported by a core of teachers a grass-root effort is, it cannot survive in a climate where different mandates coming from the top administration are in conflict. It is hard for the teachers to maintain their allegiance to a program (even if they know it is powerful) if they are being told constantly to comply with all requirements (but those requirements do not apply to the grass roots effort). Considering all the obstacles that TRALE had to endure, it is astounding that TRALE not only survived in an urban school, but it positively impacted young urban learners' learning.

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ABOUT THE AUTHORS

Dr. Cave is an Assistant Professor of Educational Psychology and the Director of Teacher Education at The Catholic University of America. She is interested in how children's writing development can be fostered in a technology-rich authentic learning environment.

Dr. Yekovich is an Ordinary Professor of Educational Psychology at The Catholic University of America. He is interested in studying how technology can be infused in an authentic learning environment to increase young urban learners' learning.