# Object Boxes for Tutoring in a Literacy Lab at a Year Round Elementary School

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*A tutoring program at a year-round public school coordinated by a certified teacher and staffed with preservice teacher tutors enrolled in a college class followed best practices and featured unique tutoring materials called object boxes (sets of objects and corresponding word or letter cards housed in boxes and used to teach language concepts). An evaluation study of the tutoring program compared pretest and posttest normal curve equivalent (NCE) scores on the TERA-2 of 86 first and second grade students who initially attained an NCE of 59.8 or lower. Those who attended 45 hours of the Literacy Lab tutoring program on their off-track time scored significantly higher (p = .002) on the posttest (mean NCE gain score = 18.1) than a control group (mean NCE gain score = 6.2) who practiced reading at home. The effect size (0.78) was large, indicating the efficacy of the program. Four different object boxes from the program are pictured and described: a word family that shows alliteration and assonance; a hink-pink riddle box; a box of objects representing words with two meanings; and an African scene with sentence cards.*

The *America Reads Challenge* (Morrow & Woo, 2001; Riley, 1997) created a national initiative with the hope that every child in the United States would demonstrate competence in and enthusiasm for reading by the end of third grade. An estimated 1100 institutions of higher education formed partnerships with public schools to offer one-on-one tutoring programs in which trained adult tutors worked with more than two million young readers (America Reads, 1999).

Evidence shows that one-on-one tutoring programs increase achievement of participating students (McCarthy, Newby, & Recht, 1995; Morrow & Woo, 2001). However, with the pervasiveness of tutoring programs, more empirical research is still needed to demonstrate their efficacy and to define effective program components (Wasik, 1997). This article reports on the components of a unique and successful tutoring program that began with the America Reads program at a year-round elementary school.

*Tutoring Program Best Practices*

Tutoring programs tend to reflect the unique characteristics of local communities, but can be generally grouped into the following three formats: highly structured school-wide reform models such as Success for All (Slavin, Madden, Dolan and Wasik, 1996) and Reading Recovery (Clay, 1992); volunteer tutoring programs that rely on community members to donate time to help young readers; and university/community partnership programs, like the one addressed in this article, that provide low cost reading intervention programs to schools and experiences for pre-professional tutors (Juel, 1996).

Whether a tutoring program is based on volunteers or partnerships, its efficacy is increased with the use of certain practices (Juel, 1996; McCarthy, et al., 1995; Rimm-

Kaufman, Kagan & Byers, 1999; Wasik, 1997; Wasik, 1998). Program coordinators should be educators who understand reading problems and current research based practices. They should establish timetables, develop lesson plans, and train volunteers (Wasik, 1998). Tutor preparation and ongoing feedback by experienced teachers are important to improving student achievement. Additionally, tutor-student contact needs to be consistent (Juel, 1996; Wasik, 1998). Other significant components of successful tutoring programs are tutoring sessions that incorporate reading and rereading familiar stories, word skill development, and writing. All of these require high quality, appropriate materials (Wasik, 1998). Wasik also suggests that a child experiencing reading difficulty will make faster progress if the approaches used in the tutoring intervention reinforce those used in the regular classroom. Thus, aligning tutoring efforts with classroom instruction becomes quite important.

*Design of Our Tutoring Program*

The elementary school tutoring program in this study was designed to emphasize best practices. In a collaborative undertaking, a university education professor trained education majors as tutors, coordinating with a certified teacher on site at the elementary school. College students participated in the program through a sophomore level course emphasizing field experience in tutoring elementary students. They received twelve hours of initial instruction in teaching emergent reading skills, phonological awareness, phonics, and three additional hours of follow-up training that incorporated debriefing, reflection, and discussion. In addition to training and experience, tutors also earned federal grant money through the America Reads program or through work-study funds.

In keeping with best practices, consistent participation was expected of all university tutors. The public school teacher planned lessons and set up the tutoring activity schedule. She modeled expert instruction, gave feedback to tutors on instructional and child guidance techniques, and monitored the program daily. Research indicates that partnerships such as this between universities and public schools are mutually beneficial for both the teacher education programs and the young students (Maheady, Mallette, & Harper, 1996; Young, & Romeo, 1999).

Tutoring took place in a special classroom called the Literacy Lab, and did not require students to be pulled out of their regular classrooms because of the school being on a year round calendar. The school had five tracks of students, four of which were in session at any one time, while the remaining track was on a three-week break. The tutoring program took advantage of the three-week break, providing first-, second-, and third-graders the opportunity to attend the Literacy Lab during their "off-track" time. Children participated in the literacy lab three hours a day for the three weeks, resulting in about forty-five hours of tutoring. This arrangement allowed the young learners to have full participation in all regular classroom learning activities while still receiving one-to-one tutoring intervention.

*Tutoring Curriculum*

"Early Success" and "Soar to Success" Reading programs (Houghton Mifflin, 2002), which were recommended additional materials that accompanied the basal reading system at the school, were used in tutoring. Each three-hour tutoring session was divided into four activity periods, allowing students to participate in listening to a teacher read aloud, reading out loud to a tutor, rereading and retelling

stories, story discussion, original writing, artwork, and hands-on language activities. The final, original component of the literacy lab, on which this article focuses, consisted of tutor-made teaching materials called "object boxes." These were hands-on phonemic awareness, phonics, grammar, spelling, vocabulary, and reading materials (Rule, 1999; Rule, 2001a; Rule 2001b; Rule & Barrera, 2003; Rule, Barrera & Stewart, 2004) originally developed by the university professor (first author) who prepared the tutors. Each tutor created four different sets as a course requirement. Because all sets were housed in the literacy lab, tutors were able to use over a hundred different sets of hands-on materials in working with children. The object boxes not only systematically incorporated engaging, hands-on activities into the instruction but also reinforced concepts children were taught in the regular classroom such as rhyming words, words with multiple meanings, and consonant blends or digraphs.

*Object Boxes*

An object box consists of several objects and corresponding word or letter cards housed in a plastic shoebox or similar container (See Figures 1-4). Montessori first used object boxes to teach simple phonics concepts. "In order to develop his mind, a child must have objects in his environment which he can hear and see. Since he must develop himself through his movements, through the work of his hands, he has need of objects for his work that can provide motivation for his activity" (Montessori, 1966, p. 82). Using concrete, hands-on materials has been shown to boost student understanding and achievement in mathematics and science (Frederick & Shaw, 1999; Ruby, 2001; Wenglinsky, 2000). Extending manipulatives to literacy learning effectively increases motivation and performance (Lapp, Fisher, & Flood, 1999;

Peregoy & Boyle, 2001; Roney, 1994; Author, 2003). Four different types of object box activities described here illustrate some of the activities employed in the Literacy Lab.

The first set of materials, shown in Figure 1, is a word family in which each member starts with the same two letters and corresponding consonant-vowel sounds, thereby showing both alliteration and assonance. The student begins by making a column of the beginning sounds, voicing them out loud as each card is placed. Next, the student chooses one of the remaining cards of ending sounds, places it against the first card to make a word, and sounds out the word. The student searches the available objects for the one that best represents the word, continuing in this manner until all cards and objects have been placed. The pattern of words in this family allows the student to see how new words are formed by changing the ending of the word.

Figure 1. Word family object box.

A second type of object box, illustrated in Figure 2, is a "hink pink" riddle box that involves problem solving. Each card displays a two-word clue on the front. On the back is the answer, which is a rhyming two-word phrase. Each word of the clue is a synonym for a word found in the rhyming pair. Students first read each clue and try to find a related object from the box. Then, the student names as many synonyms as possible for each of the two clue words, attempting to locate two words that rhyme. The visual cues of the object often assist the student in generating additional words. The student can check his/her response with the answer on the back of the card. The final part of the activity involves generating a hink pink clue for an object in the classroom and testing it with classmates.

Figure 2. Hink pink riddle object box.
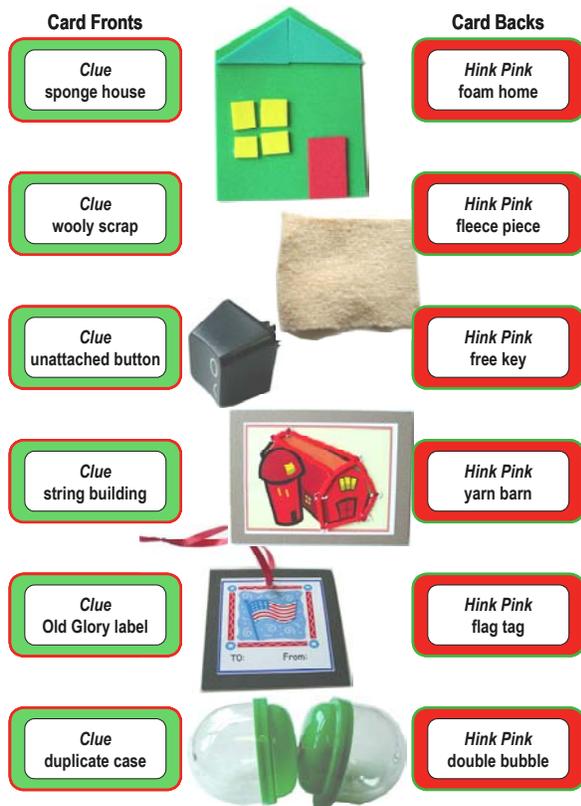


A third type of object box, illustrated in Figure 3, helps students understand words with multiple meanings. The box contains a set of terms having more than one definition. Definitions for two meanings of each term are given along with corresponding objects. The student begins the activity by making a column of the terms, and placing an object on the left and right sides of the card to represent the two meanings of the word. Finally, brief definition cards are placed next to the appropriate objects to complete the layout.

Introduction of new vocabulary and reading practice were accomplished through a scene object box (See Figure 4). The scene box depicted here was based on a village in Africa with inhabitants, animals (lion, leopard, giraffe, gazelle), a large tree, small pots and baskets, watermelons, sweet potatoes, a fire ring, and three mat board bases depicting a river, garden, and forest. Word cards for the nouns in the scene and sentences to guide student arrangement of objects and dramatization of events were provided. Students first match each object to its noun card to practice reading vocabulary. Then students choose sentence cards and place items to correspond to the expressed ideas. In Figure 4, the items have been placed according to the sentences shown. Later, they compose their own sentences on index cards and challenge classmates to read and use the scene materials to act them out. Sets of sentence cards at different reading levels can be used with the scene.

Figure 3. Words with multiple meanings object box.

| | | | | |
|---|---|---|---|---|
| stick for baseball | | **bat** | | flying mammal |
| winged insect | | **fly** | | hidden zipper |
| web-footed amphibian | | **frog** | | knotted cord closure |
| zigzag of lightning | | **bolt** | | flat-ended screw-like pin |
| sports equipment | | **gear** | | toothed wheel |

Figure 4. Village scene object box.

**Two huts are next to the river.**

**The lion sleeps in the tree.**

**A person stands by the fire ring.**

**A giraffe is in the garden.**

All of the object boxes used in the Literacy Lab were grounded in five basic principles upon which all learning and memory are based: attention, visualization, meaningfulness, organization, and association (Higbee, 1996). In order to learn, a student must pay attention. A set of interesting objects and cards mounted on colorful mat board attracts students' attention. As a student examines each three-dimensional item in an object box, the student's brain registers many visual images of the item at different angles and distances along with other physical attributes of the object such as texture, weight, and tenacity, producing a rich sensory experience. The objects, many of them toys, miniature reproductions, cultural realia, or household items, provide context and meaning for the corresponding words. As a student arranges the objects and word cards into a "layout," the student organizes the ideas, making them easier to fit into existing schema. Finally, associations are more plentiful when objects are used because they provide more opportunity for a student to make connections to items seen at home, owned by relatives, or associated with other contexts.

<p style="text-align:center">An Evaluation Study of the<br>Tutoring Program</p>

An evaluation was conducted with eighty-six first and second grade students at the school. All first and second grade students at the school were pretested and posttested for reading skills using the TERA-2 (Test of Early Reading Ability) (Reid, Hresko and Hammill, 2001). Those students with a normal curve equivalent (NCE) score of 59.8 or lower formed the pool of 86 students for the study.

The study compared two groups: those who received tutoring services at the Literacy Lab (experimental group) and students who scored similarly on the TERA-2, but who did not attend the Literacy Lab (control group). No students eligible for special education services were included. Both groups of students in the study ranged from 10 to 59.8 in NCE scores on the TERA 2. Teachers recommended those students who were most in need of intervention for participation in the Literacy Lab.

Although the two groups were not equal in this respect, the control group does provide a comparison group of peers who scored similarly at the beginning of the study. Students who did not attend the Literacy Lab took home school library books to read with their families during the off-track break. Students were asked to read independently, aloud, listen to an adult read, or write for a couple of hours each day. Most children in the control group reported that they did engage in reading/writing practice every day of the break.

A certified teacher coordinated the Literacy Lab. University sophomore elementary education majors (paid through *America Reads* or work-study funds) enrolled in a field experience course staffed the lab. Each day approximately five university tutors worked with about fifteen children in the Lab. Table 1 shows the general schedule. Tutees rotated in different orders through the centers in small groups of three to four students.

[Insert Table 1 about here.]

Table 2 shows mean pretest, posttest, and gain scores of the two groups. An independent samples t-test conducted on pretest NCE scores revealed no significant difference between groups (t = 1.45, df=84; p = 0.15). An independent samples t-test conducted on the gain scores demonstrated a significant difference between the two groups (t = -3.19; df=84; p = .002; ES=.78), favoring the Literacy Lab intervention. Children who participated in the Literacy Lab not only increased their NCE score but

also surpassed their peers who did not participate in the lab. The effect size was calculated by subtracting the control condition mean gain score from the literacy lab mean gain score and dividing by the pooled standard deviation (Myers & Well, 2003). According to Cohen's (1988) criteria, this would be considered a large effect size.

An additional and important outcome for the students was affective in nature. Teachers were given an open-ended questionnaire asking for responses regarding any differences the classroom teachers may have observed in the attitude, behavior, or proficiency of their students who had participated in the program. The single most common response was that participating students demonstrated a substantial increase in confidence.

### Discussion and Recommendations

The data from this study indicate that tutoring by competent, motivated mentors using hands-on materials in a non-pull out lab setting such as a Literacy Lab does have a positive effect on both the academic and affective achievement of first and second grade students. The reaction of Literacy Lab attendees to object box work was enthusiastic. Teachers also saw positive benefits from children interacting with the boxes.

What can't be ascertained by this study are the relative contributions that the various components of the program contributed to the students' increased achievement. For example, how much the extended school year contributed to the increase and how much the object boxes themselves contributed cannot be disaggregated. Additional research with multiple experimental and control groups is warranted to answer these questions. What this evaluation provides is a foundation upon which future research can build.

Table 1. General Schedule of Literacy Lab Activities

| Time | Activity | Center Activities (Rotating through center times) | Grouping |
|------|----------|---------------------------------------------------|----------|
| 9:00 to 9:15 | Silent Reading | | Individual |
| 9:15 to 9:30 | Read aloud: Story of the day | | Whole Group (15 students) |
| 9:30 to 10:00 | Center Activity # 1 | Early Success / Soar to Success: teacher directed activity | Small group (3-4 students) |
| 10:00 to 10:30 | Center Activity # 2 | Writing Center: creative writing related to literature | Small group |
| 10:30 to 10:45 | Break | | Whole Group |
| 10:45 to 11:15 | Center Activity # 3 | Read to tutor Computer reading skill work | Individual |
| 11:15 to 11:45 | Center Activity # 4 | Object Box Hands-on Language Materials | Small group |
| 11:45 to 12:00 | Review, Discussion, and Closing | | Whole Group |

Table 2. NCE Scores* of first and second graders on the TERA 2

| N | Gender | | Grade Levels | Condition | TERA 2 Pretest NCE Score Mean | TERA 2 Posttest NCE Score Mean | Gain Score Mean |
|---|---|---|---|---|---|---|---|
| | M | F | | | | | |
| 23 | 14 | 9 | 1 & 2 | Literacy Lab | 43.1 (10.4) | 61.2 (15.0) | 18.1 (13.9) |
| 63 | 25 | 38 | 1 & 2 | Control | 47.2 (11.8) | 53.4 (17.7) | 6.2 (15.7) |

*Standard deviations are shown in parentheses

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