Research: The Advanced-Level PD CD Program for Strategic Tutoring

Studies 1 and 2

Overview

Once the initial version of the Advanced-Level Strategic Tutoring CD-ROM (ALST) was developed, a formal pilot test (Study 1) was conducted with four tutors and eight students with LD. Each tutor worked with two students. All students were identified as having learning disabilities by their district and were receiving special education services for at least one class period per day. Two experimental designs were employed simultaneously during this study. The primary design was a multiple-probe across-tutors design, a variation of the multiple-baseline design. This design was replicated two times to determine the effects of the CD training on tutors' implementation of Strategic Tutoring. A pretest-posttest design was used to compare the pretest and posttest scores of student participants.

After a pilot test was conducted with a few tutors, the field test involved a total of 28 tutors. All participating tutors in the field test completed the Beginner-Level Strategic Tutoring CD. Then fourteen tutors were randomly assigned to the experimental group, and 14 were assigned to the control group. Two tutors subsequently dropped out of the control group, leaving twelve in that group. In addition, 28 students had been randomly assigned to the control or experimental group and they were matched with a tutor in their assigned group. When the two tutors dropped out of the study, their assigned students no longer participated. Experimental tutors completed the Advanced-Level CD. Control tutors did not. Since all the tutors completed the Beginner CD, the purpose of this study was to determine what additional value the Advanced-Level CD provided to tutors. Each of the tutors worked with one student with learning disabilities (LD). A pretest-posttest control-group design was employed for both tutors and students.

Continued…

Research: The Advanced-Level PD CD Program for Strategic Tutoring

Results

Tutors in the field test completed an average of 96% of the instructional components in the Advanced-Level software program for Strategic Tutoring.

All the tutors completed a written knowledge test before and after all instruction. Mean scores on the Knowledge Test for pilot and field test tutors are summarized in the two columns at the left side of Table 1. For the field test, a t-test indicated that there was a significant difference between the average pretest and posttest knowledge scores of the tutors participating in the experimental group [$t(13) = 27.8$, $p < .001$]. No such difference was found for the control group [$t(11) = .692$, $p = .504$]. ANCOVA results indicated a significant difference between the knowledge scores of the two groups [$F(1, 26) = 281.1$, $p < .001$], in favor of the experimental group. The value of the eta-squared statistic was .957, representing a very large effect (Cohen, 1988).

Table 1: ***Mean Scores Earned by Tutors on the Knowledge, Implementation, and Quality Measures***

Group	Knowledge		Implementation Checklist		Quality of Instruction	
	Pre	Post	Pre	Post	Pre	Post
Pilot Test Tutors	17.3%	82%	48.8%	82.5%	81.5%	86.9%
Field Test Experimental Tutors	19.1%	84.9%	48.91%	81.6%	72.1%	80.8%
Field Test Control Tutors	22.3%	23%	50.1%	52.2%	69.1%	77.2%

Continued…

Research: The Advanced-Level PD CD Program for Strategic Tutoring

All tutors were observed tutoring students before and after the experimental group tutors completed the Advanced-Level CD instruction. (All the tutors had completed the Beginner-level instruction before the pretest.) Mean implementation scores for participants in the pilot and field tests are summarized in the middle two columns of Table 1. With regard to the field test, a t-test indicated that there was a significant difference between the average pre- and post-intervention implementation scores of the tutors participating in the experimental group [$t(13) = 12.68$, $p < .001$]. No such pre- to post-intervention difference was found for the control group [$t(11) = 1.64$, $p = .129$]. ANCOVA results revealed a significant difference between the posttest implementation scores of the two groups [$F(1, 26) = 85.5$, $p < .001$]. The value of the eta-squared statistic was .881, representing a very large effect (Cohen, 1988).

Data on the quality of instruction provided by tutors who participated in the pilot test and field test are summarized in the last two columns at the far right side of Table 1. ANCOVA results for the field test revealed no significant difference between the post-intervention scores of the experimental and control groups ($F(1, 26) = .871$, $p = .434$) with regard to quality of instruction. The value of the eta-squared statistic was .080, representing a small effect (Cohen, 1988).

The students in both Study 1 and 2 took a written test of their knowledge of how to approach academic tasks. Their scores are summarized in the first two columns on the left side of Table 2. In the field test, posttest scores differed significantly from pretest scores for both the experimental and control groups [$t(1) = 17.67$, $p < .001$] and [$t(11) = 7.14$, $p < .001$], respectively. ANCOVA results revealed a significant difference between the posttest scores of the experimental and control groups [$F(1, 26) = 7.01$, $p < .01$], in favor of the experimental group. The value of the eta-squared statistic was .379, representing a large effect (Cohen, 1988).

The students also were given an academic task to complete. They were observed as they completed the task to determine whether they used strategic behaviors. Their strategy-use scores are summarized in the center two columns of Table 2. Results of t-tests indicated a significant difference between the pretest and posttest scores for both the experimental and control groups [$t(13) = 16.04$, $p < .001$] and [$t(11) = 9.54$, $p < .001$, respectively]. ANCOVA results revealed a significant difference between the posttest scores of the experimental and control groups of students [$F(1,26) = 16.2$, $p < .01$], in favor of the experimental group. The value of the eta-squared statistic was .585, representing a large effect (Cohen, 1988).

Continued…

Research: The Advanced-Level PD CD Program for Strategic Tutoring

While the students were completing an academic task, they were asked to explain what they were thinking as they worked. Mean think-aloud scores for students who participated in both studies are included in the last two columns on the far right side of Table 2. Significant differences between the pretest and posttest scores were found for both the experimental and control group students [$t(13) = 12.99$, $p < .001$] and [$t(11) = 4.47$, $p < .05$, respectively]. ANCOVA results revealed a significant difference between the posttest scores of the experimental and control groups of students on this think-aloud measure [$F(1, 26) = 7.11$, $p < .01$], in favor of the experimental group. The value of the eta-squared statistic was .382, representing a large effect (Cohen, 1988).

Table 2: ***Mean Scores Earned by Students on the Knowledge, Strategy-Use, and Think Aloud Measures***

Group	Knowledge		Implementation Checklist		Quality of Instruction	
	Pre	Post	Pre	Post	Pre	Post
Pilot Test Tutors	17.3%	82%	48.8%	82.5%	81.5%	86.9%
Field Test Experimental Tutors	19.1%	84.9%	48.91%	81.6%	72.1%	80.8%
Field Test Control Tutors	22.3%	23%	50.1%	52.2%	69.1%	77.2%

Tutors in the experimental group who used the Advanced-level CD were asked to rate their satisfaction with the professional development program. They provided ratings of mostly "6" and "7" with an occasional "5" or "4" rating. The mean overall tutor rating was 6.2.

Continued…

Research: The Advanced-Level PD CD Program for Strategic Tutoring

Conclusions
The pilot and field test results of these

studies replicate the results of the studies on the beginner-level professional development program for Strategic Tutoring. That is, after using the beginner-level CD, the experimental and control group tutors performed about 50% of the components of Strategic Tutoring (as shown in the pretest results). When the experimental group used the advanced-level professional development program for Strategic Tutoring in addition to the beginner-level program, they were able to perform more than 80% of the components of Strategic Tutoring. Thus, use of the Advanced-level CD in addition to the Beginner-level CD is critical to the proper use of Strategic Tutoring by tutors. Additionally, the student strategy-use results after tutors use the Beginner- and Advanced-level CDs are much improved over the student results after tutors only use the Beginner-level CD (90% versus 67%).

Reference
Lancaster, P. *(2005). Effects of an e-learning professional development program for beginning Strategic Tutoring skills: SBIR Progress Report for Grant # 5R44HD45146-4.* Washington, D.C.: The National Institute of Health.

Lancaster, P. (2006). *Effects of an e-learning professional development program for advanced Strategic Tutoring skills: SBIR Progress Report for Grant # 5R44HD45146-4.* Washington, D.C.: The National Institute of Health.