

# Research: The Beginner-Level PD CD Program for Strategic Tutoring

## Study 1

### Overview

Strategic Tutoring is a specific type of tutoring that has been validated as effective in helping students be successful. Study 1 focused on the effects of a software program that was designed to teach tutors the basic skills associated with Strategic Tutoring. Twenty-four tutors and twenty-four high school students with learning disabilities (LD) participated. The tutors were randomly selected into an experimental or a control group. Likewise, the students were randomly selected into an experimental or control group. Each tutor was then matched with a student. The experimental tutors worked through the Beginner-Level software program; the control tutors did not. Two experimental designs were employed simultaneously during this study. The primary design was a multiple-probe across-tutors design (Horner & Baer, 1978), a variation of the multiple-baseline design. A pretest-posttest control-group design (Campbell & Stanley, 1963) was also used to compare the knowledge, think-aloud, and strategy-use scores of students of tutors in the experimental group and students of tutors in the control group to each other.

### Results

When they were observed while tutoring a student, the tutors in the experimental group implemented an average of 15.5% of the Strategic Tutoring components during baseline. Then they worked through the CD program, and they completed an average of 94% of the instructional components and segments within the software program. After they completed the instruction and began working with students, they completed an average of 51.1% of the Strategic Tutoring components. The

tutors in the control group implemented an average of 22.1% of the Strategic Tutoring components during the baseline portion of the study and 20% of the components during the post-intervention portion of the study as they tutored students.

The mean baseline score was used as a covariate in an analysis comparing the mean scores earned after training by tutors in both groups. The criterion for significance for this ANCOVA test was set at 0.05. The results of this analysis revealed a significant difference between the mean post-intervention scores of the experimental and control group tutors [ $F(1, 24) = 78.3, p < .001, \eta^2 = .986$  (a very large effect)].

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# Research: The Beginner-Level PD CD Program for Strategic Tutoring

In addition, a t-test indicated that there was a significant difference between the mean baseline and post-intervention scores of the tutors participating in the Strategic Tutoring group [ $t(12) = 14.147, p < .001$ ]. A t-test indicated that there was no significant difference between the mean baseline and post-intervention scores of the tutors participating in the control group [ $t(12) = 1.45, p = .174$ ]. A Cohen's  $d$  effect size was calculated at 5.1 ( $r = .93$ ). This is a very large effect size.

On a written test of student strategy knowledge, the average score of experimental students was 25.9% on the pretest and 88.9% on the posttest. The average score of control students was 25.2% on the pretest and 28.2% on the posttest. An ANCOVA revealed a significant difference between the posttest scores of the experimental and control students [ $F(1, 24) = 33.4, p < .001, \eta^2 = .915$  (a large effect)] in favor of the experimental students who had participated in Strategic Tutoring.

When the students were asked to apply a strategy to an academic task, the average percentage score of experimental students was 10.8% on the pretest and 75.1% on the posttest. The mean percentage score of students in the control group was 9.2% on the pretest and 10.2% on the posttest. An ANCOVA revealed a significant difference between the posttest scores of the experimental and control groups of students on this measure [ $F(1, 24) = 34.3, p < .001, \eta^2 = .951$  (a very large effect)], in favor of the students who had received Strategic Tutoring.

When the students were asked to explain what they were doing while they completed the academic task, prior to the intervention, students in the experimental group explained an average of 7.5% of the steps and substeps of an appropriate strategy for completing the task. Following the intervention, these students explained an average of 59.2% of the steps and substeps. Prior to the intervention, students in the control group explained an average of 11.7 % of the steps and substeps. Following the intervention, control students explained an average of 14.2% of the steps and substeps. An ANCOVA revealed a significant difference between the posttest scores of the experimental and control student groups [ $F(1, 24) = 29.1, p < .001, \eta^2 = .948$  (a very large effect)], in favor of the students who had received Strategic Tutoring.

When they were asked to rate their satisfaction with the software program, the Strategic Tutors provided ratings of mostly "6" and "7" with an occasional "5" on a seven-point Likert-type scale. The mean rating for all items across all participants was 6.2. When the students were asked to rate the instruction they received from the Strategic Tutors, most of the experimental students provided ratings of "4," "5," and "6;" two students provided ratings of "1" and "2." The mean rating for all items across all experimental students was 5.1.

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## Study 2

### Overview

Study 2 was conducted following Study 1 and after the Beginner Level CD was revised. For this study, 24 adult tutors (teachers, paraprofessionals, and volunteers) participated: 12 were randomly assigned to the experimental group and 12 to the control group. Experimental group tutors worked through the Beginner CD; the control group tutors did not. In addition, 24 students were randomly selected into the experimental or control group and then matched to a tutor. A pretest-posttest control-group design was used for both tutor groups and student groups.

### Results

Tutors in the experimental group completed an average of 92% of the instructional components and segments in the CD program.

When the tutors took a written test about tutoring, tutors in the experimental and control groups correctly answered an average of 2.3% and 3% of questions on the pretest, and 75.3% and 3.7% of the questions on the posttest, respectively. 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 [ $t(11) = 22.6, p < .001$ ]. No such difference was found for the control group [ $t(11) = 1.48, p = .166$ ]. An ANCOVA revealed a significant difference between the knowledge test scores of the two groups [ $F(1, 24) = 6.517, p < .001$ ], in favor of the experimental group. The value of the eta-squared statistic was .784, a large effect (Cohen, 1988).

When the tutors were observed while tutoring a student, tutors in the experimental group implemented an average of 20.8% of the Strategic Tutoring components prior to CD training and an average of 79% of the Strategic Tutoring components after training. The tutors in the control group implemented an average of 22.2% of the Strategic Tutoring components during the pretest portion of the study and 23.7% of the Strategic Tutoring components during the post-intervention portion of the study. 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 [ $t(11) = 37.6, p < .001$ ]. No such difference was found for the control group [ $t(11) = 1.47, p = .171$ ]. ANCOVA results indicated a significant difference between the post-intervention scores of the two groups [ $F(1, 24) = 27.52, p < .001$ ], in favor of the experimental group. The value of the eta-squared statistic was .986, representing a very large effect (Cohen, 1988).

When the students took a written test about what to do as they approached an academic task, the average score for students in the experimental group on the pretest was 19.3% and on the posttest was 89.7%. The average score for students in the control group was 21.1% on the pretest and 23.8% on the posttest. ANCOVA results revealed a significant difference between the posttest scores of the experimental and control students [ $F(1, 24) = 10.88, p < .01$ ], in favor of the experimental group. The value of the eta-squared statistic was .915, a large effect (Cohen, 1988).

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# Research: The Beginner-Level PD CD Program for Strategic Tutoring

When the students were asked to explain what they were doing as they completed the academic task, prior to the intervention, experimental students explained an average of 14.8 % of steps and substeps of the targeted strategy. Following the intervention, students in the experimental group explained an average of 52.7% of the steps and substeps. Prior to the intervention, students in the control group explained an average of 12.1 % of steps and substeps. Following the intervention, control students explained an average of 13.3% of the steps and substeps. ANCOVA results revealed a significant difference between the posttest scores of the experimental and control groups of students [ $F(1, 24) = 37.2, p < .001$ ], in favor of the experimental group. The value of the eta-squared statistic was .948, a very large effect (Cohen, 1988).

When the experimental tutors rated the CD program on a seven-point scale, their mean overall rating was 5.93. When the experimental students were asked to rate their satisfaction with Strategic Tutoring, most of the students provided ratings of "4," "5," and "6." Three students provided ratings of "1" and "2." In all three cases, they admitted to preferring more traditional tutoring because they were able to get answers to questions faster (i.e., their "traditional" tutors gave them the answers instead of requiring the students to derive their own answers). The mean overall rating for the experimental students was 5.1.

## Conclusions

In both Studies 1 and 2, the Beginner Professional Development Program for Strategic Tutoring produced changes in tutor behavior such that tutors were using significantly more components of Strategic Tutoring after instruction than before instruction. In addition, they knew more about what a tutor is supposed to do in a tutoring session than the control-group tutors. Their students performed significantly better on an academic task and knew more about how to attack an academic task than the students of traditional tutors. Because the final level of performance of the experimental tutors was not as high as hoped for, another CD was designed to provide tutors with advanced skills related to Strategic Tutoring. The study that was conducted on this Advanced Professional Development Program is presented below.