



Improving Relationships & Results: Building Family School Partnerships



National Center for Special Education Accountability Monitoring (NCSEAM) in collaboration with the Future of School Psychology Task Force on Family School Partnerships



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Where are we going today?


- Let's talk about family involvement
- What are some strategies to improve how we get families involved?
- Feedback & Goal Setting



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Indicator B-8



- Percent of parents with a child receiving special education services who report that **schools** _____ **parent involvement** as a means of _____ _____ **and results** for children with disabilities



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The 4 A's

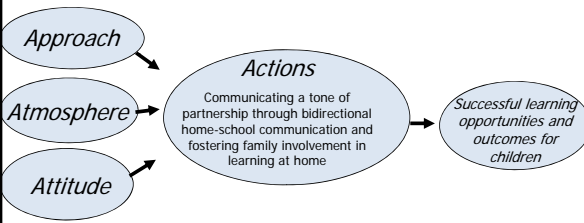
- Approach
- _____
- Atmosphere
- _____



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Developing Pathways to Partnerships

Prerequisite Conditions: "3 A's" must be in place for Actions to be accepted and effective


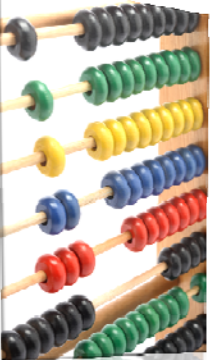



(Christenson & Sheridan, 2001; Sheridan & Kratochwill, 2008)

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Trouble Areas



- _____ Skills
- Math _____
- Math Applications



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Tips to Share with Parents



- _____ Effort
- Additional _____
- Keep time reasonable



NCSEAM 7

Interventions at Home


- Interspersing Techniques
- _____ Timing
- Cover, _____, Compare



NCSEAM 8

Interspersing Techniques



- Complete _____ tasks
- Worksheets
- _____



NCSEAM 9

Explicit Timing

- _____
- Materials



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Explicit Timing


- _____
- Evaluation



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Cover, Copy, Compare



- Improve _____
- Done Independently
- _____



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Cover, Copy, Compare

- Procedure
- _____



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Interventions for School

- Reciprocal Peer Tutoring with Parent Involvement
 - Student Pairs
 - Set Goals
 - Repeated Practice
 - Parental Rewards



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Reciprocal Peer Tutoring with Parent Involvement

- Materials
- _____ Involvement



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Reciprocal Peer Tutoring with Parent Involvement

- Introductory Procedures
 - Student Overview
 - Send Parent Letter
 - Divide into Pairs






Reciprocal Peer Tutoring with Parent Involvement

- Each Week:
 - _____
 - Meet with team
 - Determine _____ goals



Reciprocal Peer Tutoring with Parent Involvement

- Each Session:
 - _____
 - Correct/Incorrect Answers
 - _____ Roles



Reciprocal Peer Tutoring with Parent Involvement

- After each session:
 - Teacher or Parent _____
 - Correct/Incorrect Answers _____
 - _____



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Feedback. . .




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Questions for you. . .

- Taking local context into consideration, how might this information need to be modified?
- What are the potential barriers for using this model to encourage math performance?
- How can we overcome these barriers?
- What support is necessary from administration?
- What support is necessary from other school staff?
- How will we ensure this support is offered and barriers are overcome?



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For More Information

- www.ed.gov
- www.accountabilitydata.org
- www.rrfcnetwork.org
- www.nectac.org
- www.fsp.unl.edu

It's about Better Results

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We're Done for Today!
www.accountabilitydata.org



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References

- Cates, G. L., & Erkfritz, K. N. (2007). Effects of interspersing rates on students performance on and preferences for mathematics assignments: Testing the discrete task completion hypothesis. *Psychology in the Schools, 44*, 615-624.
- Heller, L. R., & Fantuzzo, J. W. (1993). Reciprocal peer tutoring and parent partnership: Does parent involvement make a difference? *School Psychology Review, 22*, 517-534.
- Lee, M. J., & Tingstrom, D. H. (1994). A group math intervention: The modification of cover, copy, and compare for group application. *Psychology in the Schools, 31*, 133-145.
- Van Houten, R., & Thompson, C. (1976). The effects of explicit timing on math performance. *Journal of Applied Behavior Analysis, 9*, 227-230.

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- NCSEAM would also like to thank those who provided essential feedback to us throughout the development process.

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Interspersing Technique Procedure

Materials

1. Math computation worksheets with a mixture of easy and difficult problems
2. Answer keys for the worksheets **OR**
3. 3 x 5 flash cards with problem on front and answer on the back

Procedure

1. Identify one or more challenging problem types for the student that are matched to his/her current capabilities.
2. Identify easy problem types the student can complete quickly.
3. Create math computation worksheets with easy problems interspersed at a fixed rate among challenging problems.
4. If the student is completing the worksheet intervention individually, have a 1:1 ration of interspersed problems (one difficult to one easy).
5. If you are using the flashcards follow the same steps listed above for identifying types of problems to place on the flash cards (Steps 1-2).
6. Print the problem on the front of the card and provide the answer on the back of the card.
7. Start by having the majority of the deck consisting of easy problems and mix in more difficult ones.
8. Use worksheets or deck of flash cards for repeated practice to build fluency of facts.

Explicit Timing Procedure

Materials

1. Stopwatch or watch with a second hand
2. Kitchen timer with bell
3. Sets of math worksheets with 100 basic math problems on the front of the sheet stapled together into a packet
4. Pencil

Procedure

1. Set the kitchen timer with an amount of work time (15, 20, or 30 minutes)
2. Inform the student that the timer is set for an amount of work time. Inform them that you will also be timing them with a stopwatch in 1 minute intervals.
3. At the beginning of each timing say "Pencils up, ready, begin!"
4. At the end of the 1 minute interval say "Stop" and have the student draw a line after the last problem answered. Repeat the procedure throughout the set time interval for the work period.
5. When the kitchen timer rings, announce that the work period is over.

Evaluation

1. Calculate the average number of correct problems per minute by counting the total number of problems correct for the period and divide them by the number of 1 minute intervals.
2. Compare the average number correct per minute over time to evaluate if the student is becoming more fluent (faster).
3. Have the student complete this activity 3-5 times per week.

Cover, Copy, and Compare

Materials

1. Training sheets of 10 math problems, with the problems listed down the left side and the answer provided for each problem.
2. 3 x 5 Index Card
3. Pencil

Procedure

1. Give the student training sheets.
2. Conduct a training session in which you teach your student to follow Cover, Copy, and Compare.
 - a. The student silently reads the first problem and answer on the training sheet on the left side of the paper
 - b. Cover that problem with the index card
 - c. Write the problem and answer from memory on the right side of the page
 - d. Uncover the problem and answer on the left side to check the written response
 - e. Evaluate the response

Evaluation

1. If the student has the correct answer, instruct them to proceed to the next problem
2. If incorrect, have the student repeat the procedure until the problems is correct
3. Have student complete worksheets 3-5 times per week

$$6+4 = 10$$

$$5+1 = 6$$

$$8+3 = 11$$

$$2+7 = 9$$

$$7+9 = 16$$

$$1+8 = 9$$

$$4+8 = 12$$

$$5+3 = 8$$

$$10 + 1=11$$

$$9+4 = 13$$

Reciprocal Peer Tutoring and Parental Involvement

Materials

1. Reinforcement Menus with activity rewards
2. Introductory parent letter
3. Team Score Cards consisting of a 3 x 5 index card or one sheet of plain paper
4. Stickers for score cards
5. Flash cards with math problems printed on the front and the problems plus computational set ups and the answers printed on the back, one problem per card with one set per pair
6. A plain sheet of paper divided into four sections "Try 1," "Try 2," "help," and "Try 3"
7. Problem Drill sheets with 16 problems, one per student per session
8. Reward certificates

Procedures

1. Tell the student that they will be learning to work in teams to help each other do well in mathematics and that their parents will be invited to provide support and rewards in that effort.
2. Send a letter to parents that provides information about the intervention and invites them to consider several options for involvement
3. Divide the class into pairs. Provide each team with a Reinforcement Menu listing activity rewards. Help each pair select a reward
4. Meet weekly with each team to help the students select their team goal (the number of problems they believe they can answer correctly as a team).
5. After each pair has chosen a team goal, have the pairs record their expected individual contributions to the team (each student's individual goal), the sum of the individual goals (each pair's team goal), and their choice of reward on the team score card.
6. At the beginning of each tutoring session, give a set of flash cards to each pair and tell the students to choose who will act as "teacher" first
7. Have the teachers hold up flash cards for the students and tell the student to work the problem on their worksheets in the section marked "Try 1" while their teachers observe their work
8. If the problem is solved correctly, the teachers praise the students and present the next problem. If the solution is incorrect, the teachers give students instructional prompts read from a prompt card and tell them to try again in the section marked "Try 2"
9. If the student does not solve the problem correctly on the second try, teachers help them by computing the problem in the "Help" section. As the teachers work the problem, they explained what they are doing at each step and answer students' questions. Then the teacher tells the students to work the problem again in the "Try 3" section. If teachers have trouble answering students' questions, they ask the classroom teacher for help.
10. After 10 minutes, signal pairs to switch roles for a second 10 minute tutoring segment

Reciprocal Peer Tutoring and Parental Involvement

Procedures (continued)

11. During tutoring segments, walk around the room supervising and identifying useful strategies teachers can use to help their students.
12. After the second tutoring segment, distribute a problem drill sheet to each student and have students work on their own for a fixed period of time such as 7 to 10 minutes
13. Then have the students switch papers with their team partner. Have them use an answer sheet to correct their partner's work or provide the correct answers yourself as the students check papers
14. Have the pairs first determine their team's total score by counting the number of problems each team member completed correctly and then compare their team score with their team goal to determine if they have "won" (met their goal).
15. If a team wins, give the students a sticker to put on their score card for that day. After three wins, deliver the reward and give them reward certificates to take home to their parents. Parents sign the certificates and indicate the type of reward provided and any additional concerns.
16. Remind students to return the reward certificates to you so that you can keep track of the home based rewards.

Date _____

Dear Parent(s) of: _____
(Student Name)

I am delighted to inform you that our class will be participating in a reciprocal peer tutoring (RPT) program designed to improve children's skills in mathematics. RPT is a collaborative learning strategy in which students work in pairs to set goals for improving their math skills, practice math problems, and provide each other with helpful feedback. Students who meet their goals three times in a row will earn a reward and will receive a reward certificate to take home to let you know they have met their goals. RPT will take place (*number of times per week*) at (*time of day*) for about 30 minutes per session.

A key part of RPT is parent involvement. When parents participate in the program, children not only improve their math skills substantially but also develop more positive attitudes toward school. You can be involved in several ways:

1. By providing rewards and privileges to your child when he or she brings home a reward certificate;
2. By attending classroom sessions to observe your child participating in RPT;
3. By serving as helpers in the classroom during RPT sessions.

If you would like to participate by providing home rewards to your child, suggested rewards and incentives include:

1. Special time with parents (shopping; eating out; going to the movies, video arcade, park or zoo)
2. Money (\$1, \$2, or \$3 per reward certificate)
3. Food treats (candy, baking a cake, choice of meal or dessert at home)
4. Toys (baseball cards, doll clothes, Nintendo cartridge)
5. Having friends spend the night on the weekend
6. Home privileges (chore-free day, getting first pick among siblings for chores that week)
7. Awards (award banner made by the parent and given to the child)

Please indicate below how you would like to participate and have your child return the bottom half of this letter. Please feel free to call me if you have any questions about RPT or ways in which you can participate. Your participation is completely voluntary and very welcome! I am looking forward to working with you to help your child become the best mathematics student he or she can be!

Sincerely yours,

Name of teacher

Reciprocal Peer Tutoring (RPT) in Mathematics Program

____ I would like to participate by providing my child with home rewards.

____ I would like to participate by attending classroom sessions to observe my child participating in RPT.

____ I would like to participate by helping in the classroom during RPT sessions.

____ I do not wish to participate at this time.

Parent Name: _____ Child's Name: _____

Ideas for Home Rewards List

Here are ideas parents used in the original study (Heller & Fantuzzo, 1991):

Category	Rewards
Parent-Child interactions	Parent/Child do together: Movie, shopping, restaurant, arcade, park, zoo, art show, skating, play a game
Money	\$1.00, \$2.00, \$5.00 (amount dependent on goal)
Food treats	Candy, bake cake/cookies with parent, choice of meal at home
Toys	Baseball cards, doll clothes, video games
Increased time with friends	Sleepover, play date, time on computer with friend (supervised)
Personal items	Sneakers, shirt/blouse, jewelry, hair clips, key chain
Home privileges	No chores, paint room, later bedtime, time on computer
Awards	Parent made award banner for child; "award" dinner in home

What other ideas for rewards are acceptable to you?

Reward Menu

Teacher's Helper

Work on special project

Extra computer time

Extra center time

Small piece of candy

Small prize

Other Ideas

The adult and child jointly select items to be used as rewards for appropriate behaviors. Rewards should not cost a lot of money, not take a lot of time, and should be natural whenever possible.

“Student” : _____

Date: _____

“Teacher” : _____

Problem # _____

Try 1:	Try 2:
Help:	Try 3:

Problem # _____

Try 1:	Try 2:
Help:	Try 3:

Work checked by (teacher aide): _____

Date:

Dear parent:

I am delighted to inform you that your child _____, has achieved his or her team goal in reciprocal peer tutoring (RPT) in mathematics three times. Please praise your child for the excellent achievement. Because of his or her hard work, your child has earned a reward at school. If you would like to provide a reward or privilege to your child at home for this achievement, please do so.

Please sign your name below, indicate what reward you provided (if any), add any comments you like, and have your child return this certificate to me. Thank you very much for your participation in our Reciprocal Peer Tutoring program!

Sincerely yours,

Name of teacher

Parent Name: _____

Type of reward provided: _____

Comments: _____

Evidence-Based Family-School Math Interventions

What we know...

Model: Interspersing Technique

Goals:

- Promote student’s mathematic abilities

Description:

- Focus on increasing students’ desire to complete academic tasks while keeping the curriculum standards
- Involves alternating the order in which both difficult and easy academic tasks are presented to the student
- Can be done with worksheets and/or flashcards

Intervention Procedures:

- Worksheets
 - Include mostly items a student already knows well and a few items that are more difficult
 - As the student progresses, the ratio of difficult to easy items may be increased
- Flashcards
 - Start by having a majority of math facts flashcards that the student knows well, and mix in some of the more difficult flashcards
 - As the student is able to learn the difficult math facts, more difficult flashcards are gradually added

Methodological Rigor:

- Randomization
- Control or comparison assessments and assignments utilized
- Appropriate unit of analysis
- Educational-clinical significance of change assessed
- Measures support primary outcomes
- Formal assessments utilized as outcome measures
- Research conducted in natural environments

Results:

- Students demonstrate increased preference for assignments, completing assignments of greater length and increased difficulty
- Technique has been found to be effective for regular and special education students
- Utilization of interspersing math items significantly increased the amount of time students remained on-task while completing worksheets

Selected References:

Calderhead, W. J., Filter, K. J., & Albin, R. W. (2006). An investigation of incremental effects of interspersing math items on task-related behavior. *Journal of Behavioral Education, 15*, 53-67.

Cates, G. L., & Erkfritz, K., N. (2007). Effects of interspersing rates on students performance on and preferences for mathematics assignments: Testing the discrete task completion hypothesis

Robinson, S. L., & Skinner, C. H. (2002). Interspersing additional easier items to enhance mathematics performance on subtests requiring different task demands. *School Psychology Quarterly, 17*, 191-205.

What we don't know...

- Long-term outcomes
- Effectiveness with a culturally and linguistically diverse population
- Results of a similar type of program targeting other academic areas
- Results of technique implementation with larger sample size

Evidence-Based Family-School Math Interventions

What we know...

Model: Explicit Timing

Goals:

- Enhance student's fluency abilities related to basic math facts

Description:

- The intervention utilizes 30 minute trials to assist students to become more automatic in math facts and more skilled in solving math problems. Intervention is easy to implement.

Intervention Procedures:

- Materials
 - Stopwatch or watch with second hand
 - Kitchen timer with bell
 - Sets of math worksheets with 100 basic math problems on front of sheet (addition, subtraction, etc) stapled together into a packet
 - Pencil
- Set kitchen timer for period of time (10 minutes, 15 minutes, etc)
- Use stopwatch to time 1-minute intervals during the period
- At beginning of each timing, say: "Pencil up, ready, begin!"
- At end of 1-minute interval, say "Stop!" and have student draw line after last problem answered. Repeat until kitchen timer goes off.
- Have student correct the worksheets and keep track of number of problems correct
- Calculate average #correct per minute – count the total # of problems correct for the period and divide by the number of 1-minute intervals
- Compare average #correct/minute over time to evaluate if the student is becoming more fluent (faster)
- Have student do 3-5 times per week
- **Methodological Rigor:**
 - Multiple baseline used across subjects
 - Appropriate unit of analysis
 - Research conducted in natural environment
 - Reliable outcome measures
 - High inter-rater reliability

Results:

- The utilization of explicit timing increased the rate of problems worked correctly per minute
- Similar results were found with use of intervention in other subject areas including writing
- Intervention tends to make performance change more observable for students

Selected References:

Van Houten, R., & Thompson, C. (1976). The effects of explicit timing on math performance. *Journal of Applied Behavior Analysis, 9*, 227-230.

What we don't know...

- Long-term outcomes of intervention implementation
- Effectiveness with a culturally and linguistically diverse population
- Results of technique implementation with larger sample size

Evidence-Based Family-School Math Interventions

What we know...

Model: Cover, Copy, and Compare

Goal:

- To improve accuracy and speed with basic math facts

Description:

- Students learn a five-step process that increases the opportunities to solve math problems and evaluate their answers
- It is an efficient strategy to improve fluency which requires little training or time from the teacher

Intervention Procedures:

- Student silently reads the first problem and answer on training sheet
- Cover the problem and answer with index card
- Copy - write the problem and answer from memory on right side of page
- Compare - uncover problem and answer and compare the two problems
- Evaluation
 - If correct answer, go on to next problem
 - If incorrect repeat procedure with the problem until correct before moving on to next problem
- Have student do 3-5 times per week

Methodological Rigor:

- Within-subjects multiple baseline design
- Appropriate unit of analysis
- Reliable outcome measures
- High interobserver agreement
- High treatment integrity
- Program components documented
- Research conducted in natural environment

Results:

- When compared:
 - All students demonstrated increased fluency and accuracy
 - Weekly maintenance assessments showed that the students were able to maintain these gains over time

Selected Reference:

Skinner, C. H., Turco, T. L., Beatty, K. L., & Rasavage, C. (1989). Cover, copy, and compare: A method for increasing multiplication performance. *School Psychology Review, 18*, 412-420.

What we don't know...

- Components linked to primary outcomes
- Cost-benefit analysis of program
- Results of techniques used with larger sample sizes
- Effectiveness with culturally and linguistically diverse population
- Whether positive effects are maintained beyond several weeks

Evidence-Based Family-School Math Interventions

What we know...

Model: Reciprocal Peer Tutoring (RPT) and Parent Involvement (PI)

Goal:

- Promote *mathematics achievement* of at-risk students

Description:

- “RPT is a collaborative learning method designed to combine the components of group reward contingencies and peer teaching” (Heller & Fantuzzo, 1993, p. 518)

Intervention Procedures:

- RPT
 - Students are divided into pairs with one student as a “teacher” and the other as a “student;” roles switched after 10 minutes
 - Students complete drill worksheets and flashcard computations with the “teacher” providing feedback, prompting, and coaching, and the “student” answering the questions
 - The pair receives a score, which is compared to a goal; rewards are administered when the goal is met
- PI
 - Parent involvement is individualized and includes: (1) rewards/incentives provided by parent, (2) parent visits to child’s classroom, or (3) parents serving as classroom volunteers
 - Child brings home “reward certificates” to inform parents of his or her school performance and reward status; parents sign the certificate, indicate the type of reward provided at home, and the child returns it to school

Methodological Rigor:

- | | |
|--|--|
| <ul style="list-style-type: none"> • Randomization • Control-comparison group • Equivalent mortality with low attrition • Appropriate unit of analysis • Sufficiently large N (N=84) • Multiple assessment methods • Group equivalence established • Educational-clinical significance of change assessed • Program components documented | <ul style="list-style-type: none"> • Interventions manualized • Validity of measures reported • Null findings reported • Program components linked to primary outcomes • Measures support primary outcomes • Implementation fidelity • Site of implementation |
|--|--|

Results:

- RPT + PI produced higher rates of accurate mathematics answers on curriculum-based measurement, significantly higher standardized computation scores, and higher ratings of positive academic and social behaviors
- Students were rated by teachers as improving in their learning skills (e.g., work habits and motivation) and described as less disruptive, more task-oriented, and more interpersonally confident
- Effect sizes range from 0.86 – 1.63 (Fishel & Ramirez, 2005)

Selected References:

Fishel, M. & Ramirez, L. (2005). Evidence-based parent involvement interventions with school-aged children.

School Psychology Quarterly, 20, 371-402.

Heller, L. R. & Fantuzzo, J. W. (1993). Reciprocal peer tutoring and parent partnership: Does parent involvement make a difference? *School Psychology Review*, 22, 517-534.

What we don't know...

- Outcome effects with diverse populations, including middle to upper SES
- Effect of parental involvement achievement independent of RPT