

Concern: Math computation

Intervention:

Explicit time drills

Explicit time-drills are a method to boost students' rate of responding on math-fact worksheets. The teacher hands out the worksheet. Students are told that they will have 3 minutes to work on problems on the sheet. The teacher starts the stop watch and tells the students to start work. At the end of the first minute in the 3-minute span, the teacher 'calls time', stops the stopwatch, and tells the students to underline the last number written and to put their pencils in the air. Then students are told to resume work and the teacher restarts the stopwatch. This process is repeated at the end of minutes 2 and 3. At the conclusion of the 3 minutes, the teacher collects the student worksheets. TIPS: Explicit time-drills work best on 'simple' math facts requiring few computation steps. They are less effective on more complex math facts. Also, a less intrusive and more flexible version of this intervention is to use time-prompts while students are working independently on math facts to speed their rate of responding. For example, at the end of every minute of seatwork, the teacher can call the time and have students draw a line under the item that they are working on when that minute expires.

Data Collection:

Chart students' progress over time.

Resources:

http://www.jimwrightonline.com/php/interventionista/interventionista_intv_list.php?prob_type=mathematics

Intervention:

Errorless learning worksheets

Reluctant students can be motivated to practice math number problems to build computational fluency when given worksheets that include an answer key (number problems with correct answers) displayed at the top of the page. In this version of an 'errorless learning' approach, the student is directed to complete math facts as quickly as possible. If the student comes to a number problem that he or she cannot solve, the student is encouraged to locate the problem and its correct answer in the key at the top of the page and write it in. Such speed drills build computational fluency while promoting students' ability to visualize and to use a mental number line. TIP: Consider turning this activity into a 'speed drill'. The student is given a kitchen timer and instructed to set the timer for a predetermined span of time (e.g., 2 minutes) for each drill. The student

completes as many problems as possible before the timer rings. The student then graphs the number of problems correctly computed each day on a time-series graph, attempting to better his or her previous score.

Data Collection:

Graph of results over time

Resources:

http://www.jimwrightonline.com/php/interventionista/interventionista_intv_list.php?prob_type=mathematics

Intervention:

Self-Correcting Materials

The purpose of implementing Self-correcting Materials is to provide students an independent practice activity that includes multiple response opportunities while also including a way for students to self-check their responses.

Data Collection:

Chart students' progress over time.

Resources:

<http://www.coedu.usf.edu/main/departments/sped/mathvids/strategies/scm.html>

Intervention:

Intermixing Easy and Challenging Problems

Teachers can improve accuracy and positively influence the attitude of students when completing math-fact worksheets by intermixing 'easy' problems among the 'challenging' problems. Research shows that students are more motivated to complete computation worksheets when they contain some very easy problems interspersed among the more challenging items.

Data Collection:

Chart students' progress over time.

Resources:

<http://www.interventioncentral.org>

<http://www.interventioncentral.org/index.php/math/97-computation-problem-interspersal>

Intervention:

Cover-Copy-Compare

Students who can be trusted to work independently and need extra drill and practice with math computational problems, spelling, or vocabulary will benefit from Cover-Copy-Compare.

Data Collection:

Chart students' progress over time.

Resources:

<http://www.interventioncentral.org/index.php/math/95-cover-copy-compare>

<http://www.interventioncentral.org>

Intervention:

Self-Monitoring and Performance Feedback

Students can improve both their accuracy and fluency on math computation worksheets by independently self-monitoring their computation speed, charting their daily progress, and earning rewards for improved performance.

Data Collection:

Chart students' progress over time.

Resources:

<http://www.interventioncentral.org>

<http://www.interventioncentral.org/index.php/math/98-computation-self-monitoring-and-performance-feedback>

Intervention:

Incremental Rehearsal of Math Facts

Incremental rehearsal builds student fluency in basic math facts ('arithmetic combinations') by pairing unknown computation items with a steadily increasing collection of known items. This intervention makes use of concentrated practice to promote fluency and guarantees that the student will experience a high rate of success.

Data Collection:

Chart students' progress over time.

Resources:

<http://www.interventioncentral.org/index.php/math/96-computation-incremental-rehearsal>

<http://www.interventioncentral.org>

Intervention:

Concrete-To-Representation-To-Abstract (C-R-A) Instruction

CRA is an intervention for mathematics instruction that research suggests can enhance the mathematics performance of students with learning disabilities. It is a three-part instructional strategy, with each part building on the previous instruction to promote student learning and retention and to address conceptual knowledge.

Data Collection:

Chart students' progress over time.

Resources:

http://www.k8accesscenter.org/training_resources/CRA_Instructional_Approach.asp

Intervention:

Scaffolding

The purpose of Scaffolding Instruction is to provide students who have learning problems a teacher supported transition from primarily seeing and hearing the teacher demonstrate & model a particular math concept/skill to performing the skill independently.

Data Collection:

Chart students' progress over time.

Resources:

<http://www.coedu.usf.edu/main/departments/sped/mathvids/strategies/si.html>

Intervention:

Mnemonic Instruction

Mnemonic instruction is a set of strategies designed to help students improve their memory of new information. Mnemonics instruction links new information to prior knowledge through the use of visual and/or acoustic cues. These strategies have been proven effective with students at a wide range of ability levels (gifted, normally achieving, and those with mild and moderate disabilities) and at all grade levels. Mnemonics are particularly helpful in teaching students with disabilities who have difficulty recalling verbal and content-area information, as they are effective with any type of verbal content.

Data Collection:

Chart students' progress over time.

Resources:

http://www.k8accesscenter.org/training_resources/mnemonics_math.asp