Math Strategies for Struggling Students

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Madison students
#10 Build relationships with students

“Teachers who are committed to effort-based ability extend themselves to build personal relationships with students.” (DuFour)

3 easy steps:

1. Ask students about their weekend
2. Spend time together outside of class
3. Attend extra-curricular activities
"Thoughtful use of calculators improves student achievement and attitudes”  

(Grouws)

“Problem solving was improved by the use of calculators”

(National Research council)
Software

“Computer games have given visual representations an enhanced role in math instruction.” (Sutton)

- EM games from Wright Group
- Achieve Now from Plato Learning Systems
ND Math Standard 4.3.5 Use computers and spreadsheets to organize and display data

![Bar chart showing the number of M & M's of different colors. The chart includes red, blue, green, yellow, brown, and orange M & M's.]
#8 Teach students to self assess

“Students also need to learn how to become effective self-assessors and to learn to monitor and advance their learning.” (Bryan)

“Reflective self-assessment allows students to be more aware of their own learning and understanding their personal strengths and weaknesses.” (Sutton)
Assessment Portfolios

1. After the teacher has graded student tests, allow them to correct the errors
2. Students complete a self-assessment checklist
3. Students identify personal strengths and weaknesses
4. Student makes a plan to improve on the math concept(s) of their choice (goal setting)
5. Each unit allows students to monitor year long progress
<table>
<thead>
<tr>
<th>ND math standards &amp; EverydayMath learning goals</th>
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<tbody>
<tr>
<td>1.7 Identify prime and composite numbers (questions #4-5, 13-14)</td>
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<td>1.13 Exponential notation and repeated multiplication (question #8)</td>
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<td>1.16 Use divisibility rules for 2, 5, and 10 (questions #11-12)</td>
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<td>1.17 Determine the prime factors for a number (questions #6-7)</td>
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<td>List the factors of a number (questions #1-3, 9-10)</td>
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Which math skills am I good at?
Which math skills would I like to be better at?
What is my plan to improve on these math skills?
#7 Play games together

“Even basic facts can be learned relatively effortlessly through meaningful repetition in the context of playing games”

(Sutton)

- Motivation to win makes them correct mistakes
- Find games that are not just skills-based but chance
- Educational and popular board and card games
- All Hands on Deck, DiceWorks
- Auntie Pasta Fraction Game
Family Game Night

- Allow family and kids to play games together
- If possible, provide food and door prizes
- Stress the fun of families playing games together

“Parents and caregivers, through games, puzzles, and other activities in the home, can also help children develop their informal knowledge and can augment the school’s efforts... Support from the home and school can have a catalytic effect on children’s mathematical development, and the sooner that support is provided, the better.” (National Research Council)
#6 Classroom and Title teachers collaborate

“Professional development cannot be done well in isolation”

(Romberg)

- Teachers plan together
- Pull-out instruction compliments classroom instruction
- Identify specific needs and tailor small group instruction

- USDE strongly promoting the in-class model
- Title 1 math teachers need to get into the classrooms
- Start by working in the classroom once or twice a month
With the passage of the *No Child Left Behind* (NCLB) Act came increased expectations for schools to raise the academic achievement of all students, in particular those at-risk of not meeting the state standards. **Title I services provided to struggling students must always be supplemental.** This means that Title I students must have the benefit of receiving the same instructional time from the classroom teacher as all other students, as well as additional instructional time from the Title I teacher.

At recent U.S. Department of Education (USDE) trainings, concern has again been expressed regarding the pullout model of instruction. A common concern is that when a child leaves the classroom, they are missing something. Title I students struggle as it is to stay caught up. Often times, when they leave the room for Title I services, they miss out on instructions from the classroom teacher or seatwork time to get assignments done. The disruption that leaving the classroom and returning when another activity has begun can be very difficult for Title I students.

The USDE is in the process of updating their Title I targeted assistance program guidance. States have been informed that the new guidance will strongly promote Title I services that are supplemental in terms of providing students with more services **without decreasing instructional time within the classroom.** However we were also informed that the pullout model will still be an allowable service delivery model.
#5 Teach math vocabulary

“Definitions are important in mathematics.” (Sutton)

- Teach vocabulary words that are applicable to concepts being taught
- Include new words in each unit
- Increases math language in the classroom
- Increases understanding on state tests
Interactive site

Hundreds of math vocabulary words
#4 Problem solving and the Cognitively Guided Instructional (CGI) method

“Students need to be encouraged to use their own thinking” (Watanabe)

1. Ask students questions in context
2. Allow students to formulate their own answers
3. Students communicate their reasoning
4. Allow students to solve problems in more than one way
#3 Manipulatives

“Using manipulative materials produces greater achievement gains than not using them” (Grouws)

- Help students correct their own errors
- Make physical models
- Use graphic organizers
- Number line representation
#2 Parent Involvement

“Very low-income parents believe they should be involved in their children’s learning” (Drummold)

- Communication
- Ask what parents are doing at home to help their children learn
#1 Connections/ Integrating

“As students relate mathematical ideas to everyday experiences and real-world situations, they come to realize that these ideas are useful and powerful.” (Zemelman)

• Projects:
  – Backpacking activity
  – House design project
  – Checks & Balances
  – April Math Month packet – Sports theme