

Like Math? Technology Supports in Math Tasks

Summary of strategies for teaching mathematics

- Present advance organizers
- Review prerequisite skills or concepts no matter how long ago they were taught
- Model procedures enough times for clarity
- Use step-by-step procedures
- Provide sufficient guided and independent practice
- Teach the skill of generalization specifically and directly
- User real-life and meaningful examples
- Focus on essential ideas for connections and foundations
- Use mnemonic strategies
- Teach self-questioning and self-monitoring
- Teach and practice and use of visual aids
- Teach gradually from the concrete to the abstract
- Use cooperative learning groups

Instructional Planning Matrix			
	Support Before Activity	Support During Activity	Support Following Activity (may include assessment)
Introduction of Skill/Concept (may be a group or class presentation)	Tell about content being addressed, connect to necessary prior learning, preview relevant vocabulary, show static form of activity, and/or demonstrate activity with modeling	Prompt for exploration, give systematic prompts to help students see patterns and make generalizations, discuss results of exploration	Remind about lessons learned from activity, use worksheet similar to that used during activity, ask for demonstration of knowledge with no prompts
Practice and/or Assessment of Skill/Concept (students use applet alone or in groups)	Remind about content being addressed, connect to necessary prior learning, review relevant vocabulary, show static form of activity, and/or demonstrate activity with modeling	Prompt for exploration, give prompts to help students see patterns and make generalizations, discuss results of exploration	Remind about lessons learned from activity, use worksheet similar to that used during activity, ask for demonstration of knowledge with no prompts
Remediation of Skill/Concept (students use applet alone or in groups with extra supervision)	Remind about content being addressed, review relevant vocabulary, connect to necessary prior learning, show static form of activity, and/or demonstrate activity with modeling	Prompt for exploration, give prompts to help students see patterns and make generalizations, discuss results of exploration	Remind about lessons learned from activity, use worksheet similar to that used during activity, ask for demonstration of knowledge with fewer/no prompts

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Accessibility Strategies to Consider

General Instruction Strategies

- Provide both visual and auditory directions
- Provide frequent feedback
- Preview and review
- Use prompts, cues, and hints
- Use nonverbal signals
- Use frequent assessments
- Use multiple representations
- Use cooperative groups
- Set up a notebook organizational system
- Teach organizational strategies
- Teach problem-solving and metacognitive strategies
- Think aloud to model self-questioning/self-monitoring strategies
- Show examples of the finished product
- Change or personalize contexts to be more familiar to students
- Adjust the amount of time
- Adjust the pacing to optimize attention
- Adjust the amount of work
- Reduce the amount of copying for students
- Read aloud
- Have students paraphrase directions and questions
- Clarify directions
- Provide word banks for vocabulary
- Teach highlighting and color-coding strategies
- Offer tools such as highlighters and post-its to help students focus
- Offer manipulatives
- Offer technology supports such as tape recorders, overhead projectors, portable keyboards, calculators, and software programs
- Offer timers to help students with pacing

Curriculum Adaptation Strategies

- Reformat handouts to reduce distracting elements and increase white space
- Adjust the level of difficulty:
 - Use friendlier numbers
 - Use simpler language
 - Reduce the complexity of the tasks
- Change context to make it more familiar or appealing to students
- Use an alternative approach
- Provide additional problems
- Provide Graphic Organizers to help the students understand concepts and organize ideas
- Provide Project Organizers to help the students keep track of tasks
- Provide Templates for tables, graphs, writing, and other tasks
- Provide Study Guides with key information on concepts to reduce copying and note-taking

Classroom Environment

- Reduce auditory and visual distractions
- Set up organizational systems
- Display organizational reminders and checklists
- Post homework assignments in a consistent location
- Post classroom rules
- Set clear guidelines for group work
- Display wall charts with key vocabulary and information
- Display examples of final products for students to use as models
- Seat students according to needs, e.g., attention, hearing, vision. Do not seat students who are easily distracted near windows or doors
- Have graph paper and templates available

Difficult Concepts

- **Word Problems**
 - Reading comprehension
 - Vocabulary
 - Mathematical concepts and mechanics
 - Analytical skills
 - Prioritizing
 - Relevancy/irrelevancy
- **Fractions (involve everything)**
 - Common denominators
 - Multiplication and division
 - Factoring
 - Exponents
 - Basic equations
 - Basic probability
 - Basic lines and slopes
 - Percents/ratio
- **Order of operations**

Attacking Word Problems

1. Read problem (do not try to solve)
2. Read/Determine what is asked for
3. Dissect sentences
 - a. Determine relevant info
 - b. Determine/discard irrelevant info
 - c. Draw picture if necessary
4. Determine math concepts involved (Difficult)
 - a. Required to manipulate relevant info
 - b. May require research
5. Tabularize relevant info if possible
6. Review/reword what is asked for
7. Use math concepts to manipulate Table
8. Use table to create an algebraic equation
9. Solve the algebraic equation

Other Adaptations

Lines and spacing, forms and format, “Chunk” information, checkboxes, models, type quality, de-clutter, graphic organizers/grids, word banks, clarify directions

Math

- Portable Calculators, Fraction Calculator, Coinculator, Money Calc, Speaking Calculator
- Talking Watches, Talking Clocks, Telling Time
 - Attainment, Trudy’s Time and Place, Intellitools

Other Tools

- MathLine, TouchPoints, Graph Paper, Elementary Ruler, Charts

Software

- Exploring Patterns
- Number Concepts 1 & 2
- Access To Math
- MathPad and MathPad Plus
 - Fractions and Decimals
 - Students can do addition, subtraction, multiplication, and division using fractions and decimals.
- Intellimathics
 - Students can select from a wide range of manipulatives:
 - attribute blocks, geoboards, base ten blocks,
 - tangrams and more

Inspiredata from Inspiration

Sunburst

- Shapes, Geometry, Algebra
- StudyWorks!
 - 2002 Math Success

Basic Math Review, Early Algebra, Elementary Algebra, Intermediate Algebra, Geometry, Trigonometry & Calculus, Statistics, Business Math

- MathPad by Voice
- Quicken

Math Resources

Fraction Calculator, <http://www.builderscentral.com/calinpochan.html>

Coinculator

Money Calc

Speaking Calculator, Independent Living Aids

Talking Watches, Kmart, Independent Living Aids

Talking Clocks

Independent Living Aids, 1-800-537-2118, <http://www.independentliving.com>

TimeScales - Attainment 1-800-942-3865, <http://www.attainment-inc.com>

Trudy’s Time and Place – Edmark, 1-800-362-2890, <http://www.edmark.com>

Intellitools – 1-800-899-6687, <http://www.intellitools.com>

Mathline – Howbrite Solutions 1-800-505-6284 E-mail: mathline@cmgate.com

TouchPoints

Elementary Ruler – Teacher Supply Stores

Exploring Patterns - Intellitools – 1-800-899-6687, <http://www.intellitools.com>
Number Concepts - Intellitools – 1-800-899-6687, <http://www.intellitools.com>
IntelliMathics - Intellitools – 1-800-899-6687, <http://www.intellitools.com>
Inspiredata – Inspiration – <http://www.inspiration.com>
Access To Math – Don Johnston Inc., 1-800-999-4660, <http://www.donjohnston.com>
MathPad - Intellitools – 1-800-899-6687, <http://www.intellitools.com>
MathPad Plus - Intellitools – 1-800-899-6687, <http://www.intellitools.com>
Sunburst – 1-800-321-7511, <http://www.sunburst.com>
StudyWorks 2002 <http://www.mathsoft.com/>
MathPad by Voice – MetroPlex Voice Computing, Inc. 817-261-1658 www.mathtalk.com
Quicken – Office Supply Stores

WebSites

Math

<http://www.dvc.edu/math/mathanx.htm>

Different types of Math problems

http://www.ldonline.org/ld_indepth/math_skills/garnett.html

National Library of Virtual Manipulatives

<http://nlvm.usu.edu/en/nav/vlibrary.html>

Developed by Utah State University and funded by a National Science Foundation grant, this site is an extensive collection of virtual manipulatives and interactive concept tutorials. It offers activities and tools for grades k-2, 3-5, 6-8, and 9-12.

Mathematics lessons that are fun! Fun! Fun!

<http://math.rice.edu/~lanius/lessons/>

Students will be engaged in activities from drawing online bar graphs resulting from solving simple equations to collecting and analyzing data and analyzing differences. Elementary topics span grade level k-12.

National Council of Teacher's of Mathematics: Illuminations imath investigations

<http://standards.nctm.org/document/eexamples/index.htm>

<http://illuminations.nctm.org//ActivitySearch.aspx>

Based on the Principles and Standards for School Mathematics, this NCTM online resource offers ready-to-use online interactive multimedia math investigations. There are pages for the teacher as well as the student. Teacher versions contain teacher notes and answers. Scroll down to find the elementary topics separated by grade level: PreK-2, 3-5, 6-8, and 9-12.

Ask Dr. Math – <http://mathforum.org/dr.math/>

Teacher2Teacher at The Math Forum – <http://mathforum.org/t2t/>

Maths Dictionary for Kids – <http://teachers.ash.org.au/jeather/maths/dictionary.html>

Accessibility strategies toolkit for mathematics –

<http://www2.edc.org/accessmath/resources/strategiesToolkit.pdf>