



2013 Ohio Educational Technology Conference

February 11 - 13, 2013

“AT, Math and CCS”



Physical Manipulatives:

Features of the AT tool	Concrete representation of math concepts
Who might use this?	Students who experience difficulties understanding the language of math symbols, quantities and actions
Common Core State Standards for Mathematics	Counting and Cardinality (K), Operations and Algebraic Thinking (K-5), Numbers and Operations in Base Ten (K-2); Measurement and Data (K-5); Geometry (K-8), Numbers and Operations - Fractions (3-5); Ratios and Proportional Relationships (6), The Number System (6-7), Statistics and Probability (6), Geometry - transformations (9-12), Geometry - Modeling (9-12)

Stern Blocks: <http://www.sternmath.com>

Cuisenaire Rods: http://www.quill.com/binney-smith-so-big-washable-watercolor-set/cbs/227747.html?cm_mmc=SEM_PLA_227747

BarCulator: <http://mathedufun-store.stores.yahoo.net/barculator.html>

PieCulator: <http://mathedufun-store.stores.yahoo.net/pieculator.html>

Pattern blocks: <http://www.learningresources.com/category/teachers/shop+by+category/manipulatives/math/pattern+blocks,+tangrams+--+pentominoes.do>

MathLine: <http://www.onionmountaintech.com/item.php?id=560>



Virtual Manipulatives

Features of the AT tool	Electronic access to physical models and interactive tools to experience numerous math concepts
Who might use this?	Students with physical impairments, but have access to a computer
Common Core State Standards for Mathematics	Applies to all standards and K-12 grade bands

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html>

IntelliTools Classroom Suite: <http://www.intellitools.com/classroom-suite.html>

Clicker: <http://www.cricksoft.com/us/products/tools/clicker/home.aspx>



Large Key Calculators

Features of the AT tool	Large keys and buttons for physical access
Who might use this?	Students with physical access difficulties who bump extra keys or those with low vision challenges.
Common Core State Standards for Mathematics	Other than graphing calculators, there is no mention of calculators in the CCS; however, some students who struggle with physical access and handwriting may require use of calculators once basic addition, subtraction, multiplication and division concepts have been mastered.

BigCalc with keyguard by RJ Cooper: <http://www.rjcooper.com/big-calc/index.html>

SciPod Low Vision Scientific Calculator by MaxiAids: <http://www.maxiAids.com/products/157/Sci-Pod-Low-Vision-Scientific-Calculator.html>

Low Vision Dual Memory Solar Desktop Calculator: <http://www.maxiAids.com/store/prodview.asp?idproduct=7319&showall=yes>



Talking Calculators

Features of the AT tool	Auditory feedback provided when calculator buttons are pressed. The auditory feedback is paired with visual feedback on the calculator screen.
Who might use this?	Students with physical access difficulties who bump extra keys or those with low vision challenges.
Common Core State Standards for Mathematics	Other than graphing calculators, there is no mention of calculators in the CCS; however, some students who struggle with physical access and handwriting may require use of calculators once basic addition, subtraction, multiplication and division concepts have been mastered.

Reizen 10-Digit Talking Calculator-Earphone-Talking Alarm, MaxiAids: <http://www.maxiaids.com/products/7330/10-Digit-Talking-Calculator-Earphone-Talking-Alarm.html>

Talking Calculator and Earpiece by Independent Living Aids: <http://www.independentliving.com/prodinfo.asp?number=276970>

Orion TI36X Talking Scientific Calculator, MaxiAids: <http://www.maxiaids.com/products/5741/Orion-TI36X-Talking-Scientific-Calculator.html>



On-Screen Calculators

Features of the AT tool	Computer-based representation of a calculator from basic math functions to high-level scientific graphing calculators. On-screen calculators can be resized for low vision or to allow for access. Some offer auditory feedback and color / contrast settings.
Who might use this?	Student's who have physical access challenges that make using a traditional calculator difficult, but have an optimized method of computer access. This may include alternative mouse pointers, keyboards or even switches.
Common Core State Standards for Mathematics	Other than graphing calculators, there is no mention of calculators in the CCS; however, some students who struggle with physical access and handwriting may require use of calculators once basic addition, subtraction, multiplication and division concepts have been mastered.

Built-in to Windows and Mac Operating Systems

Simple Calculator: <http://www.online-calculator.com/simple-calculator/>

Scientific Calculator: <http://www.online-calculator.com/scientific-calculator/>



Graphing Calculators

Features of the AT tool	Provide a means to create visual graphs of equations and make real-word connections.
Who might use this?	Students who cannot create written graphs due to handwriting challenges.
Common Core State Standards for Mathematics	Measurement and Data (3-5), Geometry (5; 6- 8), Ratios and Proportional Relationships (6, 7), The Number System (6, 7), Expressions and Equations (6-8), Functions (8), Statistics and Probability (6-8), Algebra (9-12), Geometry - Modeling (9-12)

Texas Instrument TI-83: <http://education.ti.com/en/us/products/calculators/graphing-calculators/ti-83-plus/features/features-summary>

TI-Nspire CX CAS: <http://education.ti.com/en/us/products/calculators/graphing-calculators/ti-nspire-cx-cas-handheld/features/features-summary>

Graphing Calculator (iPad / iPod Touch / iPhone app): <https://itunes.apple.com/us/app/graphing-calculator/id289940142?mt=8>



Audio Graphing Calculator

Features of the AT tool	Provide a means to create visual graphs of equations; speaking menus, describes shapes through audio tones and cues, keyboard navigation, tactile output options
Who might use this?	Students with low vision or blindness or those who may benefit from audio support.
Common Core State Standards for Mathematics	Measurement and Data (3-5), Geometry (5; 6- 8), Ratios and Proportional Relationships (6, 7), The Number System (6, 7), Expressions and Equations (6-8), Functions (8), Statistics and Probability (6-8), Algebra (9-12), Geometry - Modeling (9-12)

Viewplus Audio Graphing Calculator: <http://downloads.viewplus.com/software/AGC/>



Electronic Math Processing Software - Basic

Features of the AT tool	Customize basic problems (addition, subtraction, multiplication, division, fractions and decimals) by adjusting the color, text size, auditory feedback or switch access
Who might use this?	Any student who requires alternative access to a computer (i.e. switch access, low vision support, alternative keyboards, speech feedback) and those who require support for to organize math problems.
Common Core State Standards for Mathematics	Counting and Cardinality (K); Operations and Algebraic Thinking (K-5), Numbers and Operations in Base Ten (K-5), Measurement and Data (3-5); Numbers and Operations - Fractions (3-5),

MathPad: <http://www.intellitools.com/mathpad.html>

MathPad Plus: <http://www.intellitools.com/mathpad-plus.html>

Panther Math Paper (iPad app): <https://itunes.apple.com/us/app/panther-math-paper/id547090551?mt=8>

Mathmateer (iPad / iPod Touch / iPhone app): <https://itunes.apple.com/us/app/mathmateer/id393989284?mt=8>



Electronic Math Processing Software - Advanced

Features of the AT tool	Allows the user to write all types of math symbols on a computer, from integrals, to statistical symbols, factors, derivatives and more.
Who might use this?	Any student who requires alternative access to a computer (i.e. switch access, low vision support, alternative keyboards, speech feedback) and those who require support for to organize, write and solve higher level math problems.
Common Core State Standards for Mathematics	Geometry (6-8); Ratios and Proportional Relationships (6-8); The Number System (6-8); Expressions and Equations (6-8); Functions (6-8); Statistics and Probability (6-8); Algebra - Seeing Structure in Expressions (9-12); Algebra - Creating Equations (9-12); Algebra - Reasoning with Equations and Inequalities (9-12);

Equation Editor: Free toolbar that can be added to Microsoft Word

Enable Equation Editor for Word 2010/2007 in Windows 7/Vista: <http://www.technipages.com/word-2010-2007-enable-equation-editor.html>

Inserting equations and expressions in Microsoft Word for Mac 2011: <http://mac2.microsoft.com/help/office/14/en-us/word/item/e3b1eb0d-2e03-41e3-8baa-3669c8af4dae>

MathType: <http://www.dessci.com/en/products/mathtype/>

Scientific Notebook: <http://www.mackichan.com/index.html?products/snb.html~mainFrame>

Math Ref Free (iPad / iPod Touch / iPhone app): <https://itunes.apple.com/us/app/math-ref-free/id312756358?mt=8>



Math Modeling Software / Graphing

Features of the AT tool	2-D and 3-D math modeling software and interactive, real-time graphing
Who might use this?	Individuals with autism or other disabilities who struggle with hand-written drawings of 2-D and 3-D objects; individuals who would benefit from visual representation of constants and variables and how they affect complex graphs.
Common Core State Standards for Mathematics	Geometry (6-8); Functions (6-8); Statistics and Probability (6-8); Algebra - Reasoning with Equations and Inequalities (9-12); Geometry - Congruence (9-12); Geometry - Similarity, Right Triangles, and Trigonometry (9-12); Geometry - Circles (9-12); Geometry - Geometric Measurement and Dimension (9-12); Geometry - Modeling with Geometry (9-12); Statistics and Probability - Interpreting Categorical and Quantitative Data (9-12)

Geometer's Sketchpad: <http://www.keycurriculum.com/products/sketchpad>

Sketchpad Explorer (iPad app): <https://itunes.apple.com/us/app/sketchpad-explorer/id452811793?mt=8>

Efofex - FX Graph: <http://www.efofex.com/fxgraph.php>



3D Geometry Modeling Software

Features of the AT tool	3-D modeling software
Who might use this?	Individuals with autism or other disabilities who struggle with hand-written drawings of 2-D and 3-D objects
Common Core State Standards for Mathematics	Geometry (6-8); Geometry - Congruence (9-12); Geometry - Circles (9-12); Geometry - Geometric Measurement and Dimension (9-12); Geometry - Modeling with Geometry (9-12)

Sketchup: <http://www.sketchup.com/intl/en/spectrum.html>



Voice Input

Features of the AT tool	Use voice input to write and solve all types of math problems for pre-algebra through Calculus, Statistics and more.
Who might use this?	Students who use voice input for computer access and who require access to all levels of math notations. Some voice input tools offer conversion to Braille as well, so those students with low vision or blindness who are using Braille can also benefit from this software.
Common Core State Standards for Mathematics	Applies to all standards and K-12 grade bands, though voice input is generally more successful for students in the 5th grade and higher because of skills needed for successful dictation.

Math Talk / Scientific Notebook: <http://metroplexvoice.com/>



Multimedia Learning Supports

Features of the AT tool	Videos related to the CCS in math with embedded background information
Who might use this?	Students with autism or students with learning disabilities who require additional repetition and information presented visually which is often a preferred format for individuals with autism. Many topics include background information.
Common Core State Standards for Mathematics	Addresses standards at every grade: http://www.khanacademy.org/commoncore

Kahn Academy: <https://www.khanacademy.org/>

Math Playground: <http://www.mathplayground.com/index.html>

