

Instructional Technology for Language Processing, Logic and Math Skills

Elaine Cheesman, Ph.D. (2017)

Language Processing

People with language processing difficulties have extreme difficulty speaking and writing (expressive language) and understanding oral and written language (receptive language), including math word problems. You may notice difficulties with the following:

- *Using the correct word; word finding problems*
- *Understanding dictionary definitions*
- *Following multi-step directions*
- *Organizing written information*
- *Understanding complex sentence structures*

Vocabulary (Words and Phrases)

Lars and Friends www.larsandfriends.com/kidsapps

Teaches collective nouns (e.g., a tower of giraffes, a mob of kangaroos) through an animated, narrated story. Appropriate for younger children

Irregular Verbs www.alligatorapps.com

Reading and using correct verb form. Presents some homophones in seven engaging games. Optional text-to-speech feature reads sentences. Appropriate for younger students and English language learners

Word Hippo www.wordhippo.com

Website that provides the meaning of a word and also synonyms, antonyms, words that rhyme with it, sentences containing it, the derivatives, and etymology. Includes UK and US spellings.

Vocabulary.com www.vocabulary.com

Website useable on desktop or tablet platforms. Teachers can use existing lists, upload text from books, or create original lists of up to 10 words. Students can then practice the spelling and meaning of these words online using a multiple-choice format that includes extra information about each word. The existing “featured” lists contain text from literature, non-fiction, historical documents, morphology, speeches, and current events reported in newspapers. It also has downloadable PDFs of confusable words (e.g., affect & effect) under “Choose Your Words.” The free version allows one to create classes of up to 50 students, invite students, and assign words. Students can view their progress online.

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Wordflex Touch Dictionary <http://wordflex.com>

Oral pronunciation of main word in US or British accents. Shows word relationships as networks of semantic word associations. Word web organized by the parts of speech (noun, verb, etc.), phrases and derivatives. Includes phrasal verbs (walk away, pull out). Dynamic word trees can be moved and rearranged. Appropriate for older students and teachers

The Right Word by Dactyl Applications (must search within App Store)

Frequently misused words within the context of a sentence. Requires reading skills. Four games to practice and test skills. Appropriate for older students and adults

Phrasal Verb Machine and Phrasalstein. <http://thephrasalverbsmachine.org>

This app shows idiomatic verb phrases (lock up; turn off) accompanied by a comical animation. It requires good reading skills or a reading assistant (No text-to-speech). Phrasal Verbs view: view animation of given phrase (learn mode). Exercise view: choose the phrase to match phrasal verb. It also has Spanish and Italian options. It is appropriate for older students.

Language Structures

Following Directions Game www.grasshopperapps.com

This app includes simple narrated written directions for following directions, including single step, multi-step, directions with before and after and complex directions. It tracks user progress.

Rainbow Sentences. <http://mobile-educationstore.com>

Construct grammatically correct sentences with given words. Drag-and-drop with individual words or by phrase. Color-coding option. Manuscript and cursive options. Appropriate for young children

Sentence Reading Magic 1 & 2 www.preschoolu.com

User arranges words into complete sentences. Contains 324 two-, three-, four-, and five-word sentences. Decodable text with short vowels and consonant blends or high-frequency words. Manuscript or cursive fonts. Appropriate for younger students

Inspiration / Kidspiration. www.inspiration.com

Graphic organizer app for older students with multiple templates for different text structures / genre. For comprehension, complete appropriate graphic organizer. Speech-to-text ability

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Logic

Logic games help reduce boredom, increase our ability to think logically, improve concentration, and enhance processing speed and working memory (a type of short-term holding bin used when working with new information.) You can use puzzles as a reward or as a break from instruction, giving your hard-working student some well-earned personal satisfaction and a sense of accomplishment.

TanZen HD Lite – Relaxing tangram puzzles www.littlewhitebearstudios.com

Tangrams are a set of seven shapes cut from a single square. To solve the puzzles, the tangram shapes must be rotated and arranged to fit the prepared graphic shape. Although there are many tangram apps available, this one starts with a visual tutorial that models how to play; directions and the tutorial are easily accessible. Hints are available if needed. The lite version of this app contains 45 puzzles and has ads at the top of the screen; the full version has over 500 puzzles. This app keeps track of the preferences and accomplishments of one to three players.

Montezuma Puzzle and Montezuma Puzzle 2 www.theoakteam.com/

Popular tangram app.

Pushy www.pushymeister.com

Recipient of the “Best Mobile App for Kids” award (2012) and #1 Top Strategy Game in App Store 2010, this app challenges players of all ages to push Pushy home. The player must determine, through trial and error, how the different elements of the puzzle operate, and what tasks need to be done

Thinkrolls – Logic and Physics Puzzles for Kids <http://avokiddo.com/apps/thinkrolls-app/>

This app enhances problem solving, memory and spatial cognition skills. Children ages 5 – 8 can learn about force, acceleration, buoyancy, heat, elasticity and gravity while navigating maze puzzles.

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Math

Dyscalculia is another type of related specific learning disability. Symptoms include:

- *Lack of “number sense” (e.g., comparing the relative size of two numbers—Which is greater? 3 or 9?)*
- *Subitizing (instantly seeing how many objects (less than 10)*
- *Dysfluent processing of written numbers or mathematical symbols*
- *Inefficient calculation strategies*
- *Difficulty memorizing basic arithmetic facts*
- *Aligning numbers by place value*
- *Sequencing steps in math problems*
- *Putting language to math processes*
- *Organizing math problems*
- *Understanding the language of fractions and decimals*
- *Doing multi-digit multiplication and division problems*

Subitize Tree www.doodlesmithink.com

This app provides subitizing practice using a variety of representations (e.g., dominoes, dice, fingers on hands, and playing cards). Players can choose a specific representation to practice, change the amount of time the images are displayed, and select the range of numbers used. Settings are intuitive and easy to use. The goal is for players to correctly subitize in order to free captive animals. One animal is freed for every four correct responses. Incorrect responses signal display of the correct response.

Cursive Letter School www.letterschool.com

Helps the user form numbers correctly with engaging, scaffolded practice. It provides a starting and mid-point clues. It has progress monitoring.

Dexteria Dots and Dexteria Dots 2 www.dexteria.net

These are intuitive math game that teaches the concepts of number sense, addition, subtraction, greater-than (>), and less-than (<). The user separates or combines dots to produce a value. Rewards are entertaining characters

Flash Card Match <http://eggrollgames.com/>

Multiplication and Division, Addition and Subtraction. Provides practice and quizzes with oral narration. One can select multipliers and divisors for focused practice.

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Number Pieces www.mathlearningcenter.org

Virtual Manipulatives.

ModMath www.modmath.com

This free app provides virtual graph paper and a keyboard with numbers and math operation symbols for laying out equations and problems in all four operations with whole numbers and fractions. Intuitive settings enable contrasting rows and/or columns. After solving the problems, the user can save, print, and email completed worksheets.

iDevBooks <http://idevbooks.com>

Collection of 26 math apps that one can buy singly; some are FREE

Presents a problem; user touches a number for answer. Incorrect? Animation pauses.

YouTube videos: search iDevBooks

<https://www.youtube.com/watch?v=ccfqNjhdj3I>

MathTopia www.TopShelfLearning.com

iPhone app. Math Operations Fluency games for all four operations. It includes 25 levels for each operation.

Math Racer www.i4software.com

Computation Fluency game with a simple interface. Tap correct answer.

Sums Stacker www.MathDoodles.com

Strategically solve sets in fewest number of moves.

Award-winning math / strategy app for operations with problem solving in easy & hard Modes

Values in numbers, dice, Roman Numerals, designs, Spanish & English.

Five-0 DLX www.codevandal.com

Addition strategy Game. Scrabble with numbers. Each sequence must add up to multiple of five.

Jungle Fractions / Jungle Geometry <http://jungleeducation.com>

Engaging learn & game modes covering many topics (E.g., name parts, compare, add, multiply, etc.) Orally reads text & numbers. Choice of animal provides feedback

Oh No! Fractions www.curioushat.com

Compare, add, subtract, multiply fractions. Bar graphs show answers in “show me” or “prove it” modes.

Bedtime Math <http://bedtimemath.org/>

Daily math problems using authentic scenarios; has three difficulty levels. One can browse to find favorite topics

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Math Vocabulary www.mathlearningcenter.org

There is also a web version for computers. It has English and Spanish versions. One can select the content deck. It has several views to reinforce math vocabulary—hide or show the term, example or definition. The Math Learning Center is a website with many free resources.

X-tra Math.com www.xtramath.com

This free website helps users automatize computation skills in the four operations for problems related to decimals and fractions. Timed activities challenge the user to respond in at least ten seconds, but optimally in three seconds or less, with immediate feedback for slow or incorrect responses. Progress-monitoring graphs show responses of ten seconds, three seconds, and areas that require more practice.

CoolMath4Kids.com www.coolmath4kids.com

This free website calls itself an “amusement park” for math. It features kid-friendly information and engaging games using the four basic operations plus geometry art. The instructions require reading skills, and the visual layout may be distracting for some students. Tabs for both parents and teachers provide guidance, instructions, and options to select targeted activities. A related website for practicing pre-algebra and higher-level math is **CoolMath** (described below).

CoolMath www.coolmath.com

This free website is an extension of **CoolMath4Kids** (described above) that provides engaging games and information related to advanced math (e.g., pre-algebra, algebra, trigonometry, calculus), geometry art, and science. Tabs for both parents and teachers provide guidance, instructions, and options to select targeted activities.