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# That's puzzling!

Denise Sutherland\*

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*Research has established that working through various types of puzzles has both learning and brain-health benefits for puzzlers of any age. This article presents an overview of different types of puzzles and a selection of those that are available online.*

## PUZZLING BENEFITS

You may not realise it, but that daily Sudoku or cryptic crossword you are addicted to is keeping you healthy! It has been well established that solving puzzles of all types helps the brain to stay active, and such activity may help to stave off some forms of dementia. Physical changes occur within your brain when you learn new things, and recent research has shown that this plasticity exists lifelong. So no matter how “age rich” you are, you can still learn new things, and gain many benefits along the way. There are mental health benefits for all ages, though, so solving puzzles at any age is a good workout for your brain.

What research has determined is that doing a puzzle that utilises a particular skill, improves that type of skill. So games where your memory is tested, for example, will improve your memory in general (but not necessarily your logic skills or vocabulary). If you want to improve your vocabulary, then play games that specifically target vocabulary like Scrabble, Boggle and crosswords. If you want to improve your logic skills, then take on Sudokus and logic problems.

When solving puzzles specifically as a “mental workout”, you need to look for four things: novelty, stimulation, escalation and reward.

- Novelty: new is better when it comes to mental workout activities. Give a new type of puzzle a try.
- Stimulation: puzzles that force you to concentrate hard and challenge you are more beneficial. If you have never tackled cryptics before, maybe now is the time.
- Escalation: doing activities that become increasingly difficult; as you work up to higher levels, they challenge you mentally.
- Reward: receiving rewards (which can be as simple as the sense of achievement you get from solving a particularly hard puzzle) has been shown to improve learning and memory at a biochemical level.

## Educational benefits

Puzzles have been used by teachers for decades to help students of all ages. They are a fun way to engage with new content, and an easy and painless way to learn new facts. Another important aspect of solving puzzles is that the process mimics the scientific method. It is the same process in miniature: faced with a conundrum, you form a hypothesis (eg maybe a “3” goes in that box), test the hypothesis, then based on the results, adjust your “experiment”, and continue in this manner until the problem has been solved. It is valuable for children to learn this thought process and procedure.

So, solving puzzles can improve your mental health, knowledge base, spelling, vocabulary, logic skills, memory and ... there's no reason *not* to do them, really.

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All websites and webpages referred to in this article were viewed 10 November 2011.

## PUZZLING VARIETY

### Word searches

Word searches can be very helpful puzzles for people who are trying to learn English as a second language, or anyone learning a second language. They are excellent for spelling practice and improving vocabulary, and can be less stressful than crosswords for people with dyslexia. They can be done by children and adults alike, and offer the opportunity to do puzzles together.

### Crosswords

Crosswords are a great way to broaden your spelling, vocabulary and general knowledge. There are several main varieties of this popular puzzle. American crosswords are quite different from British ones, and each variety has a lot to offer. British-style crosswords are generally what we see here in Australia, and have an “open” grid structure, with a lot of black squares (outs) in the grid. Many of the white squares are “unchecked”, which means they are not crossed over by another word. The clues are either “straight” definition/synonym clues (eg “African feline (4)” = LION) or cryptic clues (eg “Bird colour (4)” = TEAL). As shown, they often include the letter count after the clue.

In American-style crosswords, the grids are “solid” – there are very few black squares, and every white square is “checked” (crossed by both an across and a down word). In theory, it is entirely possible to solve an American crossword by solely answering the Across clues, for example. They often have a theme running through the words of a puzzle (such as film names). American grids contain a lot of “word fragments” too, something which is necessary because of the highly overlapped nature of the grid (which makes creating them extremely difficult). Things like prefixes, suffixes, compass directions (eg ENE), and letter combinations that are not proper words are included. Their clues are written quite differently too. Some are straight definition clues, but there are also a lot of obscure trivia clues, often about movies, songs, actors, television, brand names, archaic vocabulary, foreign words etc. They can even use some quasi-cryptic clues such as:

*From \_\_\_\_ Z = ATO (From A to Z, get it?)*

*It can be open or safe = HOUSE (ie Open House or Safe House)*

*Tour end = IST (Tourist)*

The British-style cryptic crosswords are most popular in the United Kingdom and other Commonwealth countries. They are seen by many as the pinnacle of crosswording (and by others as an incomprehensible waste of time!). The lateral thinking and depth of knowledge required can make solving each puzzle a real achievement. In cryptics, each clue in the crossword is basically a mini-puzzle. Every clue contains a definition (as in a quick crossword), and some form of word play, which could be an anagram, a pun, a homonym or some other trick. When you have solved it, the clue itself should give you confirmation that it is correct. For example:

*Whipped cumin paté contains air (9) = PNEUMATIC*

This is an anagram (indicated by the word “whipped”) of the letters in “cumin paté” giving a word meaning “contains air”.

There are several books on learning how to solve cryptic crosswords. Over the years, I have reviewed them all, and particularly recommend *Solving Cryptic Crosswords* by BJ Holmes (A & C Black, 2005) and *Cracking Cryptic Crosswords* by Colin Dexter (Offox Press, 2009). Colin Dexter is a long-time aficionado of cryptics, and his television detective creation, Inspector Morse, was frequently seen with *The Times* cryptic at hand. I am currently writing *Cryptic Crosswords For Dummies*, too, for Wiley Australia. It will be out in August 2012.

### Cryptograms

Cryptograms are another popular puzzle, where a familiar quotation or other piece of text is turned into something completely incomprehensible and you need to crack the code. Letter substitution ciphers are used here, where one letter or symbol is substituted for each letter of the alphabet. In a cryptogram, the word “BICYCLE” might be encrypted as “DTZIZPF”, for example. There are a set of

strategies for solving cryptograms, which delve into letter frequency analysis (the most frequently seen letter is likely to be E, the most common three-letter words are “the” and “and”, and most single-letter words will be A or I). Solving cryptograms is a real test of logic, as well as looking for patterns within words. They are very challenging, but very rewarding to solve.

### **Logic puzzles**

Sudoku and other logic puzzles are not actually mathematical puzzles, but pure logic puzzles. These puzzles are very valuable to solve if you want to hone your reasoning and logic abilities, and come in a range of difficulty levels. You may also be familiar with the “Bob bought Jenny a ring, John is not married to Sue, Jenny was born in July” type puzzle as another, longer word/scenario-based form of logic exercise.

### **Visual puzzles**

Jigsaw puzzles are quite a different sort of puzzle activity, not involving language at all, but this can be a positive advantage. They hone your pattern recognition skills, and are great for anyone with language difficulties. Jigsaws employ creative and pictorial elements. Many enthusiasts set challenges for themselves, such as not looking at the final picture on the box at all, or working to a time limit. Solving jigsaws can produce an almost meditative state, as total absorption in the task at hand can give you a break from the worries of the day.

There are many visual puzzles, mazes being a prime example, as well as “hidden picture” and “spot the difference” puzzles, and too many others to mention.

### **PUZZLING ONLINE**

There are a vast number of free puzzle websites online. There are many benefits to solving puzzles online – cryptograms can automatically put your guesses for each letter through the whole phrase instantly, with no need for pencil and eraser if a guess is wrong. Crosswords can be quickly checked, or a letter or word hint revealed. Some people enjoy competition, and many sites have leaderboards and timed puzzles. Casual puzzle games are very popular on social networking sites: it is now possible to play a game of Scrabble or Words With Friends with a friend in another country via Facebook or your iPhone, for example.

Here are just a few of my favourite online puzzle sites, as a starting point for you.

### **Crosswords and word puzzles**

#### ***The Guardian***

*The Guardian* site (<http://www.guardian.co.uk/crosswords>) has a massive collection of cryptic and quick crosswords, and Sudoku and Kakuro puzzles, from over 30 compilers. You may well find your favourites here, for example, the Gemini cryptic crossword from *The Canberra Times* is archived on this site (so yes, it is British, not Australian!).

An archive crossword search function has recently been added to the site, so you can quickly find puzzles by your favourite setter, type, or publication date. You can also sign up for the crossword editor's monthly update email, and participate in discussions about each crossword in comments below each crossword. You can either solve them online, or download print versions to do with pencil on paper.

#### ***The Puzzle Wizard***

The Puzzle Wizard (<http://www.puzzlewizard.com.au>) is a tidy little website from a good independent Australian puzzle writer and publisher, Greg Parker (whom I know personally, and is my only puzzle-writing colleague). His *Puzzle Wizard* book series is available in Australian and New Zealand newsagents and by subscription. His books have a broad selection of clues, with no repeated words (in crosswords) or clues within a book, and a good Aussie flavour. You can solve many of his puzzles online too, on the website listed above. He has six themes you can choose from online: Straight Crosswords, Movies, AFL, Cricket, Music, and Television. There are also 100 free crosswords under the “Early Online Crosswords” section. They require Java to work.

### **Lovatts**

Over the years, Lovatts (<http://www.lovatts.com.au>) has grown to become the biggest puzzle publisher in Australia. While Lovatts has a tendency to repeat words and clues (especially within its print publications), which may annoy readers, the website is very well done and has many free puzzles to solve online, including quite approachable cryptics. The cryptic crosswords are a fair bit easier than the British cryptics you might get, for example, from *The Guardian* site, so they are good to try if you are new to this form of crossword. The online crossword interface is very nicely designed and easy to use, and includes a helpful “Word Hint” option if you are stuck (which reveals the entire word in question).

The site also has Sudokus, quizzes, trivia games, logic puzzles, word searches, hidden object games and, of course, a range of crosswords from quick and general knowledge puzzles to cryptics. It even has links to a range of PopCap online games (Bejeweled 2, Bookworm etc). Click on the *YouPlay* link to access this extensive free content. There are a limited number of open access puzzles in each category. To access further content you do need to sign up for a subscription (either Free or Premium paid). The free service includes advertisements.

### **Puzzlers’ Cave**

Puzzlers’ Cave (<http://www.puzzlerscave.com>) has free quick, cryptic and themed crosswords, which are British-style. The site also has free Sudoku puzzles. Puzzles are submitted by Puzzlers’ Cave members (ie amateur setters). Membership is free. You can also use the site’s Crossword Compilation software to create your own crosswords – the basic software is free to download, while the professional edition costs about £25 (Windows only).

### **East of the Web**

The East of the Web site (<http://www.eastoftheweb.com/games>) features a nice selection of very well-designed cryptogram puzzles (Cryptoquotes), and some word definition games. The site offers solo and multiplayer games.

### **Arcade**

The Arcade site (<http://www.topwordgames.com>) has some well-designed word games that go beyond the usual word searches (eg Word Grid). Free membership allows you to post your score and compete against other members.

### **Dictionary websites**

Some dictionary websites have good online games:

- Dictionary.com (<http://www.dictionary.reference.com/fun>) (American);
- Merriam-Webster (<http://www.merriam-webster.com/game>) (American);
- Oxford Dictionaries Online ([http://www.oxforddictionaries.com/page/puzzles\\_us/puzzles-and-games](http://www.oxforddictionaries.com/page/puzzles_us/puzzles-and-games)) (British). The Oxford Dictionaries’ electronic content seems to lag behind everyone else (I have their *Shorter Oxford English Dictionary on CD*, for example, and would not recommend it). But the website has a few nice games online.

### **Wordplays.com**

Wordplays.com (<http://www.wordplays.com>) has a range of puzzles, including a daily cryptogram, and some useful solving aids for Scrabble (Scrabble Help, in particular, is rather good), a crossword helper, an anagram solver and a cryptogram-solving aid. The site is rather “bare bones” but it does work well. Plus the cryptograms on the site include quotations from the works of fiction author Terry Pratchett, always a bonus.

### **Crossword Puzzles**

Crossword Puzzles (<http://www.crossword-puzzles.co.uk>) has a great collection of links to other crossword sites.

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### **Cryptograms.org**

Cryptograms.org (<http://www.cryptograms.org>) is a free site devoted to cryptograms. It has a huge collection of over 42,000 quotations, which are turned into cryptograms. There are options to reveal letter frequencies, which is very helpful. The paid membership option removes advertisements from the site.

### **Word Games**

Word Games (<http://www.wordgames.com>) is a swish website with free content. The site has Daily Word Searches with a practical online interface. It also has free crosswords, anagram games, and much more.

The Easy and Medium word searches (<http://www.wordgames.com/daily-word-search.html>) on this site do not have any diagonal words, while Hard ones do have a few (but not as many as you would get in a word search book). The online interface is easy to use, although it is not possible to undo a word selection.

### **Sudoku**

There are a vast number of websites that offer free Sudoku online or printing (eg <http://www.sudoku-puzzles.net> and <http://www.sudokuonline.us>), but I have yet to find a good one that allows you to add “pencil notes” to the cells, listing possible numbers that can go into each cell. Sudoku Slam reveals all possible numbers that can go into a cell in “Sumo” mode (<http://www.sudokuslam.com>), but you cannot add these notes yourself.

### **Mazes**

If mazes are your thing, check out ClickMazes (<http://www.clickmazes.com>). You can learn something about the history and logic of mazes, and how to design your own at the Online Maze Designer website (<http://www.gwydir.demon.co.uk/jo/maze/makemaze>).

### **Pictorial puzzles**

The Facebook game Gardens of Time by Playdom (<http://www.apps.facebook.com/gardensoftime>) is a prime example of the new breed of “casual games”, which are often played on social networking sites. It is a very sophisticated and engaging hidden object and spot-the-difference game. It is suitable for adults, and well worth a look. There are many others, of course, as a web search on “hidden object games online” will show you.

### **Jigsaws**

Jigsaws are a medium that has translated well to the online environment and there are many jigsaw websites. You can easily move the pieces around with your mouse: when two pieces match, they will “click” together and then move as a unit, plus there are no problems with finding table space or accidentally vacuuming up pieces. Sometimes the jigsaw pieces are presented in any alignment and you have to rotate them; other sites present all pieces “lined up” without rotation.

These jigsaw sites often have the capability of uploading your own photos to turn into jigsaws, which you can then share with friends or even on your blog or website. Some sites offer competitions for the fastest solving times. Digital jigsaws are not constrained by the physical limitations of jigsaw cutting machines, or of pieces having to be physically robust, so you can get some very unusual piece shapes.

Here are just a few of my favourite jigsaw sites, which I feel have the best graphics and gameplay.

### **Jigzone**

Jigzone (<http://www.jigzone.com>) is completely free and offers a wide range of images, cuts and numbers of pieces for each jigsaw. The pieces are presented in correct orientation (ie not rotated). Pieces click together with a small sound, and merge into one piece. There are many “cuts” (jigsaw puzzle piece designs, such as classic, swirls, crazy, squares and triangles). This site also has Jigzone

cut – which uses letter shapes. You can add jigsaws from this site to your blog. There is a small image of the completed puzzle, to the left of the working puzzles, to refer to. The site has over 100 jigsaws of dogs alone, as well as many other categories.

### **Crazy 4 Jigsaws**

Crazy 4 Jigsaws (<http://www.crazy4jigsaws.com>) allows you to solve jigsaws online, with a vast gallery of photos to choose from; you can upload your own photos and email jigsaws to friends, all for free. If you really get into it, a paid Premium membership allows you to access a greater variety of photos and fine artwork, higher piece count puzzles and different “cuts”, the ability to save jigsaws in progress, a full screen mode, “show only the edge pieces” feature, and so on. Cuts include “classic” jigsaw pieces, hexagons, diamonds, United States (pieces in the shape of the American States), tessellated shapes, and more. You can have jigsaws delivered free to your email too. I like the smoothed edges on the puzzles on this site. The puzzles start with as few as six pieces – perfect for a young child to solve.

### **Jigsaw Planet**

Jigsaw Planet (<http://www.jigsawplanet.com>) uses Java. It has some puzzles with rotated pieces (an option chosen by the creator of each puzzle), and a nice little menu bar alongside each puzzle that allows you to view the completed picture, put a “ghost image” of the completed picture underneath the puzzle pieces, and scatter the pieces. The site will automatically save your progress on a puzzle: you do not have to solve a puzzle all in one sitting. When you upload a photo to be turned into a jigsaw, you select the number of pieces and the puzzle piece shapes, and whether they are rotated or not. Unusually, this site has nude, gay, and violent content, which you can filter under your Account Settings, as you choose. These images are not visible to the casual browser.

### **Jigidi**

Jigidi (<http://www.jigidi.com>) is a community website where users upload their own photos or artworks to create jigsaws. The number of pieces in a puzzle is determined by the size of the image. This site does not have the same level of solving tools or options as other sites, but is completely free and has clear, smoothed puzzle pieces. Only the “classic” puzzle piece cut is used. You can zoom in or out of your puzzle-working board. The developers run a blog about the site. You can select puzzles based on a number of pieces or general themes (People, Buildings, Animals, For Kids, Mosaics etc). You can upload up to four images to be turned into jigsaw puzzles each day. There is no small image of the final puzzle to refer to provided, though.

## **PUZZLING SOLVING TOOLS**

Sometimes you are stuck and there is no harm in getting a little help. These online resources can help you get out of a tight corner. Solving aids can also give you an insight into the whole “writing puzzle” process, and the depths of the puzzles they decode. They are also very helpful if you are creating your own puzzles. There is no shame in seeking resources or reference materials in solving puzzles, no such thing as “cheating” (unless you are actually in a competition, and then it *is* cheating). It all helps you to learn more.

### **OneLook**

OneLook (<http://www.onelook.com>) is a dictionary search tool that has a complex set of searching options, so you can put in wildcard letters, specify themes (eg all words relating to mountains), phrases, definitions and a reverse dictionary (for finding a word when you know what it means, but the word itself is lost to you). It has indexed 1,063 dictionaries (including foreign language and specialist dictionaries, such as medical and culinary ones), and over 19 million words.

### **Word Navigator**

Word Navigator (<http://www.wordnavigator.com>) is similar in some ways to OneLook, in that you can search dictionaries to find words with wildcards (ie letters missing, as in when you need a word that fits the pattern “v-something-something-something-m” = v???m. The answers are velum, venom and vroom, by the way).

Clicking on a word will bring up the following information (using “cat” as an example):

- dictionary definitions for “cat”;
- how many letters the word has (3);
- anagrams found from those letters (ACT);
- a list of all words found within the letters of “cat” (at, ta);
- a group of word lists related to the base word:
  - words within the base word (at, ta);
  - words starting with the base word (515 words, from catabases to catworms);
  - words containing the base word (2,644 words, including abdicate and secateurs);
  - words ending with it (27 words, from alley cat to wildcat);
  - words created by changing one letter of the base word (17 words in this case from bat, eat and fat to tat, vat and wat);
  - words starting with the first letter, “c”;
  - words ending with the final letter, “t”.

While this may seem to be a ridiculous amount of information on any word (and it is), it is vastly helpful if you write cryptic crossword clues. And helpful if you are solving puzzles too.

You can browse the word list alphabetically, by word length, letter mix or all unique letters (ie no repeated letters within the word, such as “gelatinous” or “troublemaking”). The site has a similar crossword solver to the *Oxford Dictionary* one, where you input the length of the word and the pattern of known letters and blanks, and it brings up all possibilities.

### The Anagram Engine

My favourite anagram website is the Anagram Engine (<http://www.easypeasy.com/anagrams>). It is a great solving (and puzzle writing) aid, with a lot of variables (minimum word length, maximum word length etc), and several dictionaries to choose from. It also has a Scrabble mode (although not all the words it comes up with are in the official Scrabble dictionary).

### Homophones

Homophones (<http://www.homophone.com>) is a site (just one of many) that lists English homophones; words which are spelt differently, but sound the same (such as “jewel” and “joule”). This can be very handy when solving (and writing) cryptic clues.

### Oxford’s Solvers

Oxford’s Solvers (<http://www.oxforddictionaries.com/solvers>) has an anagram solver (exact letters only, if you put in “horse”, it will come up with hores, hoser and hoers but not smaller words, such as hero or rose), and a crossword solver.

### Cryptogram solvers

Cracking ciphers is a more mathematical and complex task than you will see in most other puzzles. There are some good online solvers out there, often based in university maths departments. You might like to try:

- <http://www.esg.montana.edu/meg/consbio/cryptogram/crypto.html>;
- <http://www.rumkin.com/tools/cipher/cryptogram-solver.php>;
- <http://www.blisstonia.com/software/WebDecrypto>.

### Sudokuwiki.org

Sudokuwiki.org (<http://www.sudokuwiki.org>) gives great descriptions of solving strategies for Sudoku, KenKen and DenDoku puzzles, with solving aids as well as free puzzles to solve online.

### Cruciverb.com

Not a solving aid per se, but if you are interested in getting more involved in the crossword world, then Cruciverb.com (<http://www.cruciverb.com>) may be of interest. The site has a massive clue database of published crossword clues (paid subscription, currently US\$35 per year), Cruiverb-L, a

crossword compilers' discussion email list (the focus is on American-style puzzles), reviews of crossword compilation software, publishers, basic rules for crossword composition (American-style only), and various pieces of advice from experienced American setters.

### **PUZZLING PAPERS**

Various newspapers, such as *The Sydney Morning Herald SmartEdition*, *The Age Digital Edition* and *The New York Times*, offer paid subscription services to their digital editions. Subscription covers their news reports, and generally also covers their online crosswords and other puzzles. It is sometimes possible to get a membership that only covers their puzzle content, if that is the main thing you are interested in. There are free apps available for devices such as iPhones and iPads that allow you to download these crosswords to your device and solve them interactively. This is really the future of crosswords.

### **PUZZLING BUSINESS**

The puzzle writing business is a difficult one to make a living in (ask me – I know it all too well). A few of us self-publish (eg the Australian *Puzzle Wizard* series). Some work for one of the big groups such as Lovatts. Others of us are syndicated, often in combination with self-publishing as well.

As a professional puzzle writer, direct puzzle writing contracts are few and very far between. I have been contracted directly by a whole two industry groups in the past nine years, writing themed crosswords for their membership magazines. One generally has to be syndicated to get into newspapers and magazines, which means your syndication agent deals with the publishers directly, and handles the supply of your puzzles on a regular basis to your media outlet. The syndicator handles all the advertising, promotions, contracts, supply and billing, which is nice; the syndicator also takes a sizeable percentage of your typically meager earnings for this service.

Most newspapers are loath to change their regular crossword compilers (a change in crossword setter can generate masses of letters from upset readers). Most compilers in Australia at the moment are elderly men; not many women work in this field. As earnings are calculated on distribution numbers for the publication, getting into a major metropolitan publication is best. Unfortunately, pretty much the only way to get a "foot in the door" with these big publications is for one of the regular compilers to retire or fall off their twig. There are also very few puzzle magazine publishers. For most of us, this career does not earn a living wage.

The institution of print (but not journalism) is in strife. In recent years, the internet has had a serious impact on newspapers, with many newspapers struggling to stay in print. The printed medium is very expensive, after all. Paper, ink, printing presses, distribution, and postage cost a lot of money. The problem has become so widespread that there is even a Newspaper Deathwatch website in the United States (<http://www.newspaperdeathwatch.com>).

While Australian newspapers are possibly faring a little better than those in America, globally many papers have gone out of print, especially if they have not made the transition to paid online services successfully. Despite many people buying the paper *for* the puzzles, sales of syndicated content that the papers have to pay for, such as puzzles, have plummeted in recent years, especially since the global financial crisis. Advertising revenue is steadily dropping each year, readership has declined, papers have cut circulation, laid off reporters and editors – in some places as much as 50% of their newsroom staff has been fired. I feel that to survive, newspapers really need to offer subscription services online, and embrace the new technologies such as iPads and mobile phone web browsers. The days of paper and ink are numbered. Many papers struggle with this, and it seems to me that some syndicators do not manage electronic content so well either. Despite having offered online versions of my crosswords for the past five years, for example, not a single paper has taken up this version of my puzzles.

I am hopeful, however, that as the current generation of crossword compilers retires, I will be a part of the new generation. Like so many in the information and publishing industries, working more online and utilising interactive media is vital to providing new and engaging resources (including puzzles) to the public.