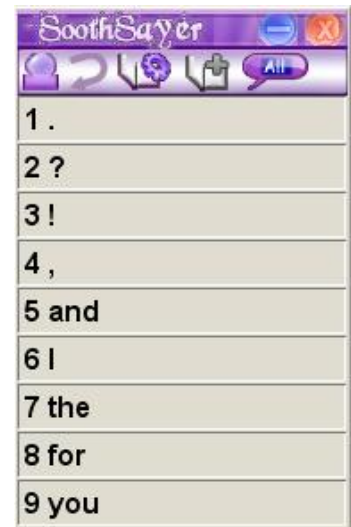


Title: **Universal Access using Word Prediction**
 Author: Gerry Kennedy © March 2009
 Software: Word Prediction
 Category: Creating text using Word Prediction Software



1. Introduction

Word Prediction (*WP*) software was developed many years ago and meets a number of different text-entry needs. It provides slow or reluctant writers or students who often misspell words, a means of developing and entering text confidently without spending all their time worrying about which letter comes next, or finding the right keys. Some packages also provide additional cues and supports to help students write more fluently.

Students can use predicted words as they write, to help them spell more accurately and with fewer errors. Most *WP* programs allow the user to hear the selected words as they are chosen. In addition, the text can be echoed as text is entered for spell checking and word flow. Other programs help review writing with text colour and highlighting as well as text-to-speech options.

Word prediction software suggests words for students to read, listen to and use, with spoken feedback to help them identify and locate mistakes. Word prediction and speech feedback are important functions that bolster students' strengths to assist writing. The text can be 'sent' to programs including Microsoft® Word, Open Office Org applications, MS WordPad, spreadsheets, databases, MS PowerPoint Notepad or Outlook, and when using some Word Prediction products, the text can also be highlighted and read aloud within that application.

2. Advantages and Disadvantages

Many people think of *WP* as the software in their mobile phones that provides predictive text. There are now a number of different technologies, all offering different pathways and solutions.

It is in matching a student's individual needs with the most relevant and pertinent program, with the set of features that are required, that afford successful implementation and ongoing viability. Research into the options available, trialing the software and carefully deciding upon the most useful technology is the key.

Word prediction does not correct grammar, sort out punctuation or provide creative ideas. It supports the user in helping to determine and choose the correct spelling of a word, often with dictionary and/or homophone support. Students of all ages who have problems writing and editing text, particularly those with learning disabilities, often benefit.

It has certain clear advantages, yet for others, it can slow typing speed in entering text, as it takes time, patience and practice before it accrues benefits and results. The list of words that appear onscreen distracts some students. It interrupts their thinking and flow. Fast typists often complain that their typing speed is slowed considerably as they have to check the words that are constantly appearing and changing in the word prediction list.

Recording their ideas using a Dictaphone can assist in maintaining their fluency. If the text has been spoken into a recording device (e.g. a mobile phone, MP3 player, PocketPC or digital recorder) then the student needs only to replay the voiced recording and enter the text at a speed that accommodates *WP* software.

Slower typists and students who are disengaged, frustrated by their poor spelling and word usage discover that word prediction, over time, increases productivity and text entry. The words listed in front of them give them confidence. Students can listen to the words so as to identify the one required. With text-to-speech support, words can be voiced before selecting them, as they are selected and as the phrase or sentence is completed in the designated software program (e.g. MS Word).

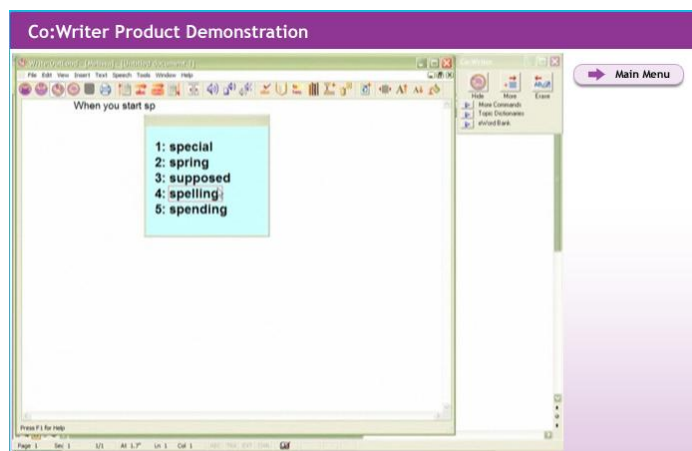
1. How Word Prediction Works

WP software programs basically operate the same way. Once installed and configured, they are either embedded in a software program or function as a fixed or floating toolbar. Once activated, a box appears on screen. It can be customised to be centred, located next to the cursor or appear anywhere else on the screen (e.g. at top right, bottom left etc.).

As the user types a letter, a list of predicted words will appear. The box or window colour can usually be customised with text, foreground, highlight and background colour. Size and font style are also optional.

As more letters are entered, the prediction 'engine' selects different sets or combinations of words that are most likely. The more letters entered, the shorter the list and the more accurate the potential selection. This is commonly referred to as *Word Completion*.

Using Word Prediction in 'next word' mode, some WP programs will promote and enter more than one word. After the user finishes entering a word, the box will display a list of words that normally follows the word just entered, based on his or her own vocabulary. For example, suppose a student has entered the phrase "I want to go home" on more than one occasion. Hence forth, after he or she types the word "want" the box will display the word "to" as an offering for the next word. If the student selects the word "to", the box will display the word "go" along with 8 other words that have, in the past, followed the word "go." Word completion and word prediction will greatly accelerate "typing" speed with keyboard users as well as switch/scanning input users.



The words can appear automatically as well, but this is usually only selected as a useful option after the student has been using the software for a time period. A list of 'automatically predicted' words can interrupt a student's planning and thinking and be quite disconcerting for some users.

Suffixes and prefixes can be entered in some programs, as well as shortening a word. WP programs differ in how they treat misspellings. Features can be turned on to only accept and use words that are correctly spelt. Others accept phonetic errors and will still locate words that sound the same (e.g. 'egs' for exhaust). Yet others have more intelligence, for example, type "hipp" and the WP types the rest of "hippopotamus" and a space because the word hippopotamus is the only word in the main dictionary that starts with the letters "hipp".

Some programs will automatically add any unrecognised word that a student types to his or her user dictionaries. Every program offers sets of features that distinguish and differentiate them from competitor's products. The student's vision, cognition, keyboard skills, mouse skills, use of verbal and written language, use of extended vocabulary, ability to learn and master software as well as cope with two concurrent program windows, needs to be thoroughly explored and assessed.

a. Frequency and Recency

Word Prediction works on two main principles of frequency and recency. Words are predicted on a number of criteria. Firstly, the word needs to be in the dictionary being used. If a word has been used recently, it will appear further up the list. It used frequently it will appear at the top or high in the list. After a time period, the software predicts more and more accurately as it continually monitors the word usage and vocabulary being used by the student.

It is therefore important that users log on or sign on as individual users, rather than a 'shared' program, so that the accuracy and integrity are not compromised. WP software on student Notebooks works very well as the student is the sole user of the software. Some programs provide multiple user logins, so this can alleviate the problem.

b. Dictionaries

Word Prediction applications come with a built-in Main Dictionary. The size of the dictionary in words varies. If a word that a student uses frequently isn't included, he or she can quickly add it to a custom 'user dictionary'. A feature commonly added to most WP programs is the automatic function where new words can be added as they are entered. There are also topic dictionaries that can be downloaded from developer's web sites or created by the education support team. Users can also import lists of words on themes, topics or interest areas.

c. Abbreviation and Expansion

In addition to word prediction, most WP programs offer 'abbreviation expansion', and sentence completion. This is where a letter combination such as *NHHS* can be expanded to **New Haven High School**.

d. Text-to-Speech Support

In some WP programs, students can adjust the pitch and speed of a selected speaking voice. The human sounding SAPI 5 voices that are now available in commercial off-the-shelf programs provide clearly articulated speech.

The word being highlighted in the word prediction window (by hovering over it with a mouse, left or right clicking on it or by pressing a designated key) can be voiced so as the student can check that it is the required word. Words can be scanned up or down the list and voiced. Once the word is 'sent, it can be voiced or the completed sentence.

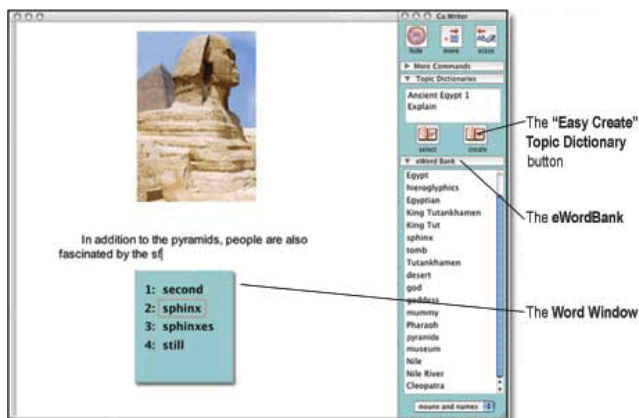
There are numerous options and combinations so scrutiny of the software is required before it is purchased.

Also, users can correct any words that are not pronounced correctly using *Voiced Exceptions* or *Pronunciation Editors* functions. This avoids incorrect and annoying repetitive pronunciations especially of place names and proper nouns.

Another popular feature in *Soothsayer* is where students or educators create individualised sound recordings and attach them to an abbreviation. In addition to hearing words and sentences spoken as students type and highlighted text in another application, they can also hear letters and punctuation as they type.

e. Hot Keys

Most programs have user definable 'hot keys' where certain popular or critical functions are assigned to keyboard combinations (e.g. Alt Shift =). As long as they don't conflict with the operating system (e.g. *MS Windows*) or the application they are using (e.g. *Open Office Writer*) it avoids locating the mouse and then locating and accessing a menu option. It saves time, is usually faster for most users and caters to students who are blind or vision impaired. It also caters to students who fatigue using a mouse and keyboard combination and to competent typists.



4. Commercial Word Prediction Software:

Co:Writer SOLO www.donjohnston.com or www.spectronicsinoz.com/catalogue/20793

Co:Writer has been a very popular and well-regarded application for many years. It is designed for struggling writers, as translating thoughts into writing can feel overwhelming for many students. Their writing often suffers from phonetic or

inventive spelling, lack of richness, limited detail, and incoherence. It can empower students with more written self-expression. Co:Writer SOLO is the only word prediction program to use *Linguistic Word Prediction* intelligence. For students who struggle with translating thoughts into writing, there is reputedly no other tool that interprets what they intend to say. It has been used extensively in Australia for students in Primary, Secondary and Tertiary education.

There are versions for the Neo and AlphaSmart.

Co:Writer SOLO Benefits include:

For Students:

- ❖ Compose grammatically correct sentences containing rich, topic-specific words
- ❖ Write more and produce longer sentences with fewer spelling errors
- ❖ Build confidence by actively participating in written expression

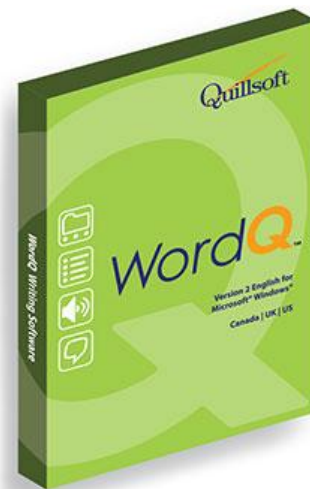
For Teachers:

- ❖ Provide a Universal Design for Learning. Note: *This is an external link writing environment*
- ❖ Customise student's curriculum and instruction with easy-to-create topic-specific dictionaries
- ❖ Provide access to electronics writing environments
- ❖ Facilitate immediate writing independence using the 'Setup Wizard'

WordQ 2.4

www.wordq.com/ or www.spectronicsinoz.com/product/22464

Word Q is a simple and easy-to-use tool that helps students write independently and with confidence. WordQ 2 suggests words for students to use and provides spoken feedback to help find mistakes. It features a carefully thought-out design with only essential functions that have demonstrated benefits to help students write. It was researched and developed at Bloorview MacMillan Children's Centre, an internationally renowned children's rehabilitation hospital located in Toronto, Canada along with educators and professionals working with students with learning disabilities.



WordQ 2 includes features including:

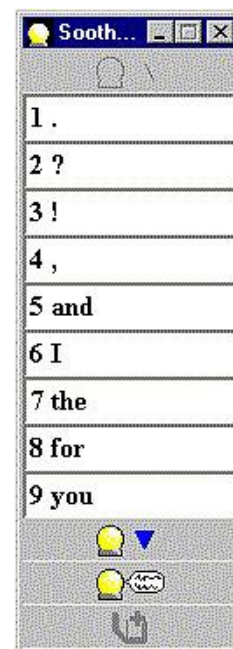
- A high-quality natural sounding text-to-speech engine by the *Acapela* Group This is an external link is included so that text is more clearly heard.
- In-context prediction makes corrections easier by displaying appropriate word predictions wherever the text cursor is placed, even when the cursor is in the middle of a word
- A temporarily disappearing word prediction box allows you to move through your documents without distraction while holding down any arrow key
- Usage examples with speech feedback of commonly confused words, such as "there" and "their," helps students distinguish between homophones
- Saving user vocabularies and usage examples as an independent file allows easier editing and sharing with other users

Soothsayer V4.0

<http://www.ahf-net.com/sooth.htm>

SoothSayer Word Prediction helps students enter text faster and more accurately. It works in conjunction with other programs such as off-the-shelf word processors, web browsers, databases, spread sheets, etc.

SoothSayer comes with a built-in Main Dictionary of over 11,000 words, and if a word that a student uses frequently isn't included, he or she can quickly add it to a custom User Dictionary or have SoothSayer automatically add it automatically. In addition to word prediction, it offers abbreviation expansion, and sentence completion (text up to 500 characters long).



There are several speech options available including automatically speak letters, automatically speak last typed word, automatically speak last typed sentence, speak word prediction word/sentence when it is pointed at with the mouse, speak word prediction word/sentence when it is selected, and speak quickly using the *Quick Speech* button.

For speech augmentation, the built-in SoothSayer Speech Dictionary offers a foundation of over 350 frequent sentences (based on abbreviation expansion) and students and teachers can add their own favourites.

Penfriend Versions

<http://www.penfriend.biz/> - Penfriend XL, XP Portable and FR versions

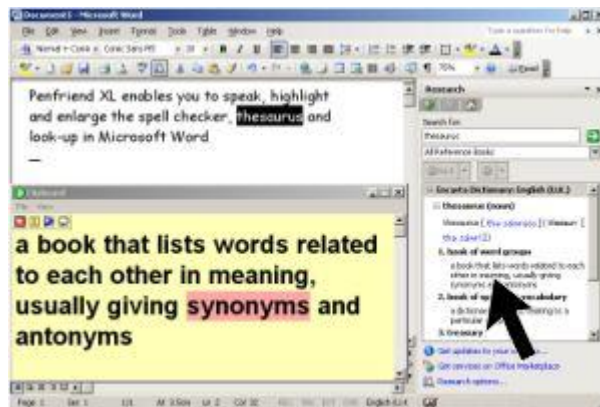
Penfriend XL is a comprehensive literacy aid which can boost confidence and increase reading and writing skills across the age and ability range for those with dyslexia, physical disabilities including visual impairment, or for anyone learning another language. It provides features including:

- ❖ Screen reading and text magnification
- ❖ Word prediction in many languages
- ❖ On-screen keyboards for many languages
- ❖ Modern Foreign Languages (MFL)
- ❖ English as a Second Language (ESL)



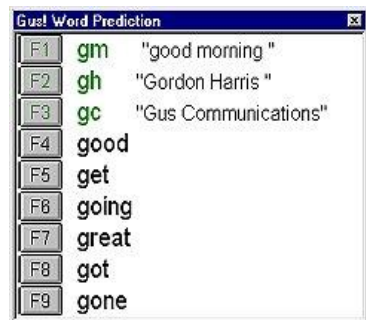
Penfriend Portable brings the literacy support features of Penfriend XL to students on the move. It is available for use on an unlimited number of computers, one at a time, so is ideal for taking between classrooms, sites or taking home in the evening. Even better, the USB hand-held Penfriend software requires no installation, and can be used on machines with stricter administrative policies than for other software. Simply double click on the icon, and it works. No installers, no networks, no delays are experienced. Penfriend is also available in several European languages including French, Italian, German and Swedish. Demo versions are available. Highlights in Version 3 include:

- ❖ Still better prediction
- ❖ New 30,000 word lexicon
- ❖ Integrates with Clicker 5.2 software
- ❖ Add images to predictions with Clicker 5
- ❖ Handles empty lexicons
- ❖ Drag and drop lexicons
- ❖ Learning of new words improved
- ❖ Extended on-screen keyboard
- ❖ Easy to type numbers and URLs
- ❖ Better interactions with other programs
- ❖ Links to free voices
- ❖ Improved preferences



Gus! Word Prediction

<http://www.gusinc.com/wordprediction.html>



This WP utility aids students who have with limited keyboarding ability such as those who are slow typists, probe or pencil users, or one-finger typists. It can be used with standard application software.

Gus! Word Prediction places an "always on top" window on the computer screen. Users can stretch or shrink the window to any size required, and the font size will adjust automatically. As students input each character, Gus! Word Prediction revises the displayed "word list". When the student sees the desired word, he or she simply left-clicks on the word or presses the corresponding function key (F1 - F9) and Gus! Word Prediction will complete the word. It predicts current and next word based on the users frequency of use. It also includes abbreviation expansion ("gm" = "good morning").

Kurzweil 3000

www.kurzweiledu.com/ or www.spectronicsinoz.com/catalogue/14408

Kurzweil 3000 is a scanning, reading, writing and learning solution for students with learning disabilities or reading difficulties. Students can also highlight and extract key elements of the text and place them into specific columns.

Kurzweil 3000 is a leading reading, writing and learning software for struggling students, including individuals with dyslexia, learning difficulties, or those who are English Language Learners. Because Kurzweil 3000 is also content independent, teachers in primary schools, secondary schools and higher-ed institutions can use it to help students succeed in the classroom, regardless of curriculum or lesson plan.

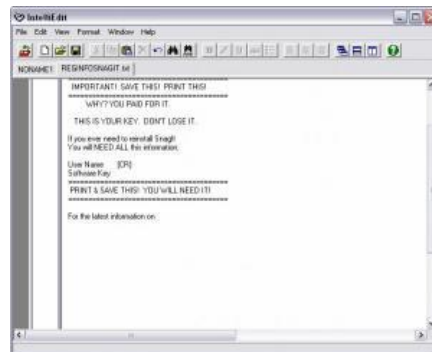
Educators and independent research have demonstrated that Kurzweil 3000 provides not only the tools students need to improve their reading speed and comprehension, but also the features that make it possible for them to learn and study independently. With the aid of visual and auditory feedback, the software helps students keep up with assigned reading, learn critical study skills and successfully complete writing projects and tests.

5. Word Predictions and other Auto Completion Freeware

IntelliEdit V1.0

<http://intelliedit.en.softonic.com/>

It is a useful free program with some great features. IntelliEdit is a *Rich Text Editor* powered by smart auto-completion. It can auto-complete words and phrases and auto-expand shorthands. It can learn new words and phrase while typing. IntelliEdit can tremendously boost student's typing speed. IntelliEdit is based on a tab-page MDI interface. Students can create, edit and print multiple RTF documents conveniently in IntelliEdit. IntelliEdit is slim in size and quick to load.



PhraseExpress

www.phraseexpress.com/

PhraseExpress eliminates repetitive typing and manages frequently used text snippets for quick access. The text prediction feature watches out for repetitive text patterns and offers to auto-complete such common phrases. *PhraseExpress* extends the MS Office autotext feature to any program and can expand text abbreviations and correct typos in any application, not just in *MS Word*. The Clipboard Manager provides access to previous Windows clipboard items.



Open Office Org 3.0

<http://openoffice.org-2009.com/>

Open Office Org 3.0, specifically *Writer* in the language options, has a word prediction feature. *Writer* has built word completion capability into this word processing program. It is refreshable, meaning that students have to load pre-existing documents first and then close them, which puts all the words into memory so that *Writer* can predict them in the student's new document. Its threshold is 10,000 words and the minimum for how long a word has to be for *Writer* to predict it, is five letters. *Writer* offers a choice after typing the third letter. Its choices are single and alphabetical, so that if students have words alphabetically close together they continue typing until he or she reaches the one required, then presses enter. The program also automatically inserts a space after the word if this option is selected.



6. Portable Versions on USB Thumb Drives

Students often require solutions at home, school and local library or at friend's and relatives houses. If they can carry a portable solution and use it universally in any domain, it means they are independent and non reliant on network technician's and managers. The software is carried and accessed via a USB thumb drive so no installation of software on host computers is required. Their specific configuration and software functions are stored in one place. Access is immediate and fuss free.

Programs that provide portable versions on USB thumb drives include:

Penfriend Portable

www.penfriend.biz/products/pf-usb.shtml

Penfriend Portable includes all of the familiar features of Penfriend XP and Penfriend XL, such as:

- ❖ Predictive Text entry
- ❖ Speech feedback
- ❖ Abbreviation expansion
- ❖ Learning new words
- ❖ Multiple user profiles
- ❖ On-screen keyboard

TextHELP Read and Write V9

www.texthelp.com/ or www.spectronicsinoz.com/product/readwrite-9-gold-mobile

The Word Prediction feature develops students writing skills by providing the tools to construct sentences with ease. As the user types text, a list of suggestions appears in the Prediction Panel. Subject specific or industry related vocabulary could be added to the prediction database to enhance the user experience.



The Read&Write 9 GOLD Word Predictor learns the user's style of writing and predicts the word they want to use next. The prediction database has been enhanced with many more new words and improvements have been made to the speed of processing and suggestion accuracy. Read&Write 9 GOLD continues to allow users to select from context-specific prediction files such as Arts, Beliefs and Books. This further enhances the relevance of the suggestions made by the student. Users can also edit the contents of their custom dictionary and can edit the prediction suggestions to better suit their requirements. Indicators beside each word show context accuracy. This means users will be less likely to make a grammatical error, thereby increasing the quality of their work.

ClaroRead for Windows 2008

www.clarosoftware.com

ClaroRead contains a word prediction feature, which can be useful for certain computer users. ClaroRead uses a base prediction dictionary consisting of the most frequently used words in the English language. The dictionary learns as users type, and rejects words that don't pass the automatic spellcheck. The Prediction List will automatically appear by the cursor during typing. Alternatively, users can dock the Prediction windows anywhere on the screen to use it as a reference.



The ClaroRead Advanced Settings Editor now allows the creation of multiple Prediction Dictionaries, by importing words from existing documents. Ideal for creating subject and curriculum specific dictionaries, it puts the tool into the hands of the teacher.

Kurweil 3000V11 for Windows – Portable www.kurzweiledu.com/kurz3000USB.aspx

- Increased 4GB capacity swivel drive
- New RealSpeak Spanish voices
- Upgraded *FineReader* and *ScanSoft OCR* (Professional)
- Inclusion of Virtual Printer (Professional)
- Version 11 Writing Path enhancements found in Windows V11 software



5. In Conclusion

Word prediction programs vary quite dramatically in how they appear on screen, function and work with other applications. Some are stand alone (*Co:Writer*, *SoothSayer*, *Penfriend*, *Gus!* and *Predictability*), others included in literacy support tools (*Read & Write*, *Wynn*, *Kurzweil 3000*, *ClaroRead*) where others work within an environment (*IntelliTools Classroom Suite*).

The features and functions have been designed to accommodate different audiences. Packages that offer support to adults may not suit younger children. Switch and head point users may wish to use programs that contain features that assist users with physical needs. Yet other programs provide better support for students with dyslexia or vision needs.

There is choice. Therefore, the programs need to be trialed either on loan or as a demo for quite a lengthy time period before one is discounted or chosen. Once a student relies on a technology and builds competence, timing, understandings and a repertoire of skills, it is difficult to quickly or easily change and adapt to another program.

Some programs will provide additional resources online or on a demonstration CD.

Resources include:

- ❖ Fact Sheets
- ❖ Testimonials
- ❖ Research papers and articles
- ❖ Online demonstrations (e.g. www.donjohnston.com/media/flash/product_demo/cowriter/index.html)
- ❖ Online training videos (e.g. www.kurzweiledu.com/howtov11.aspx)

Resources:

The AltFormat web site is an independent portal focusing on how developments in the production of alternative format materials are transforming the education of visually impaired and dyslexic students of all ages. Link to www.altformat.org/ for a wealth of information. It provides up-to-date information on alternate formats to text, software, research and practical ideas and strategies for educators and students. It is an excellent resource for parents of students who have dyslexia and learning disabilities. Other older but still useful articles discussing Word Prediction software come from the NCIP library located at <http://www2.edc.org/NCIP/LIBRARY/wp/Profile.htm> and the Trace Centre at <http://trace.wisc.edu/docs/wordprediction2001/>. The perspective from 1994-95 to the present day in 2009, is really interesting.

A very handy and useful Word Prediction comparison chart can be viewed online or downloaded from Spectronics web site <http://www.spectronicsinoz.com/article/22248>. It compares nine (9) different programs in a matrix format, listing and highlighting key features and functions.

Author: Gerry Kennedy ICT Consultancy © March 2009