Crossword Compiler Ver. 8.1

Reviewed by

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PRODUCT AT A GLANCE

Product Type:
Multilingual crossword puzzle generator

Languages:
Numerous alphabetic languages supported by Unicode

Level:
Any

Media Format:
Web download or optional CD-ROM

Operating Systems:
Windows: Windows 2000, XP+
Macintosh: Web-based puzzles will run on Mac as well

Hardware Requirements:
PC: Pentium+, 16 MB RAM, 4 MB hard disk space (plus up to 128MB for optional word lists),
CD-ROM drive (needed only to install program to the hard disk) 480 x 640 video, 256 color

Supplementary Software:
Java-enabled browser if web-based puzzles are generated

Documentation:
Online help file

Price:
Single copy: $49
Multiple copies: 5 for $170; 10 for $270; teacher network for $390; no restrictions/fees for distribution of puzzles
Optional CD-ROM $19
Optional word lists: English, $29 for single user, $230 for teacher network; foreign languages (Danish, Dutch, French, Finnish, German, Hungarian, Polish, Slovak, Icelandic, Italian, Latin, Norwegian, Portuguese, Romanian, Russian, Spanish, Swedish, Turkish), $14 for single user, $110 for teacher network
See developer’s website for more details (http://www.crossword-compiler.com/download.html).
GENERAL DESCRIPTION

*Crossword Compiler Ver. 8.1 (CWC)* is a professional multilingual crossword puzzle generator which produces both printed output and interactive web-based puzzles. Version 5 of the program was originally evaluated nearly 10 years ago, and the program has undergone numerous improvements and enhancements since then. Many of these improvements are of particular usefulness for language teaching applications.

One of the major improvements in CWC with pedagogical implications is the greater range of languages with which it can now be used. To a large extent, this is a consequence of the incorporation of Unicode font encoding in more recent versions of the Windows OS (CWC runs only on Windows). While CWC itself is not Unicode compliant, it can now accept puzzle grid input from Western European, Central European, Baltic, and Cyrillic languages as well as Greek and Turkish. Puzzle clues can also be written in any of these alphabetic languages as well as double byte character systems (e.g., Chinese and Korean), provided the corresponding fonts and keyboards have been installed in the OS. It is possible to create bilingual crossword puzzles, for example, Greek puzzle grid input with Chinese clues.

A decade ago CWC already offered an impressive variety of puzzle formats, which have been even substantially extended in the version reviewed here. There are now nine basic puzzle types (see Figure 1): Cryptic, American, Freeform, Shapes, Word search, Sudoku, Clues in squares, Barred, and Coded.

Figure 1
Puzzle Formats

![Create New Puzzle]

Each puzzle format allows the author to set the grid dimensions, anywhere from 3 x3 to 100 x 100 depending on puzzle type. Moreover, the appearance of the puzzle grid can be fine tuned to select text font, square sizes, the kind of numbering to use, colors for blocks, letters, background of clues and lines, to mention just the most obvious.
There is no printed documentation for CWC, but online Help offers very detailed instructions on all aspects of the program's operation.

**EVALUATION**

**Technological Features**

Although CWC operates only on a PC platform running the Windows OS, web-based puzzles created with it can, of course, run on a Macintosh. On either platform, a Java-enabled browser must be installed to access the interactive puzzles.

A free 30-day demo version of CWC can be downloaded directly from the producer's website (http://www.crossword-compiler.com/download.html). The demo is fully functional but does have certain restrictions, for example, grid pattern sizes are limited, puzzle templates cannot be saved, and there is no access to the Word List Manager. The full version of the program can also be downloaded from the web or obtained on a CD-ROM (for an additional fee of $19).

The downloading and installation of CWC was straightforward and trouble free. The installation process also adds an uninstall utility, which is a sine qua non of any well designed program. CWC was tested on a PC with an Intel Duo CPU 2.53 GHz processor running Windows XP (SP 3). It operated very quickly and never missed a beat.

The screen design of CWC is clear and uncluttered; navigation is likewise quite transparent. With the exception of the manual creation of word lists, all functions are menu based and produce results which are immediately reflected on screen. Many menu options also have corresponding keyboard shortcuts.

**Use with foreign languages**

CWC is able to handle a number of foreign language scripts, but as with all Windows-based programs, access to foreign character fonts depends on the necessary languages and keyboards being installed at OS level. The online Help within CWC provides instructions on how to do this, as does Windows online Help, but inexperienced users may need technical assistance getting their computer properly set up.

Once the operating system has been set up to handle foreign character scripts, CWC itself needs to be configured to employ them. Because it is possible to use one language in the puzzle grid and another in the clues, two separate font selections must be made. One of these is tucked away within the Grid menu options, the other within the Clue properties. Anyone disinclined to read instruction manuals carefully is bound to come to grief trying to get CWC to work with non-Western European languages. The technologically challenged would be well advised to seek assistance. That being said, once everything is installed and one knows where to set the languages to be used, it is possible to create a template that defaults to these settings.

This still leaves the problem of actually getting foreign characters into the puzzle grid and clues. When foreign keyboard layouts are used, key/character mappings may no longer correspond to what is indicated on the physical keyboard. To input text, puzzle makers have to know the layout of the national keyboard or use some type of input method editor. Fortunately, for solvers of web-based puzzles, CWC allows a virtual keyboard to be created and displayed for grid input. Like the font settings, the display of a virtual keyboard can be saved as part of a puzzle making template.
The creation of an on-screen virtual keyboard is a two-step operation. While functional, and clearly explained in the online help, the procedure is not all that intuitive. First, even though it actually corresponds to the font of the grid, the character set which will eventually be displayed as a virtual keyboard needs to be entered in an alphabet box located in a Language Specifics submenu of Clue properties (see Figure 2). Contrary to what might logically be expected, whatever the characters typed into the alphabet box, the font of the Clue properties must be set to the language in which the clues are written. Second, the option to actually display the alphabet as a virtual keyboard must be activated from a menu buried deep within the File, Web export, Export files, Applet Options.

**Figure 2**
Virtual Keyboard

**Puzzle creation**
There are two basic ways to create a puzzle. Using for instance the Cryptic or Coded formats, one can begin by selecting in advance a grid pattern (letter sequences and blocks) and then fit words into the grid. Predetermined grid patterns can either be completed manually or automatically using word lists. Alternatively, using for example the Freeform or Shape templates, one can start with a word list and then allow the computer to determine a grid pattern based on inclusion of a maximum number of words from the list.

**CWC** comes with two English lexical inventories: Basic English (8,452 words) and a much larger Default English (112,319 words). A word list bundle of nearly 20 languages can also be purchased. The number of entries in each lexical inventory varies considerably, as follows:

Danish (24,000), Dutch (120,000), English (120,000), French (149,000), Finnish (24,000), German (284,000), Hungarian (70,000), Polish (136,000), Slovak (35,000), Icelandic (41,000), Italian (75,000), Latin (77,000), Norwegian (61,000), Portuguese (Brazil) (19,000), Portuguese (Portugal) (25,000), Romanian (33,000), Russian (34,000), Spanish (72,000) Swedish (122,000), Turkish (39,000).
Additional English word lists are also available, including a 3 million headword list extracted from Wikipedia.

While some of the English word lists are thematically based (e.g., world cities, geography, and medicine), the content of the other lexical sets appear to be determined more by availability of digital inventories than by any explicit selection criteria. CWC includes a Word List Manager utility that allows words to be added and deleted from existing lists or new inventories to be created. It is, thus, very easy to create lists based on whatever criteria one wishes to use (e.g., relative frequency of occurrence, textbook glossaries, etc.).

Because of the large inventory of words required to complete predetermined grid patterns, for most pedagogical applications the less lexically demanding Freeform and Shape formats are the most useful options. CWC comes with four dozen ready-made grid shapes (see Figure 3). These include continent and country maps and common objects like a boat, a house, a heart, and a Christmas tree. CWC also allows the creation of as many more shapes as an author cares to design.

Figure 3
Shape Formats

Once the desired grid option has been selected, the next task is to fill-in the puzzle with the words which will become its solution. This is accomplished either by writing words directly into the grid, typing them into a word list window, or selecting an existing lexical inventory.

Two menu options, Use Words and Use Words with Clues (see Figure 4), allow puzzle makers to type grid words directly into CWC and, on the basis of these, to automatically build a puzzle grid. If Use Words only is used, clues can be added later using the Clue Editor. The advantage of adding clues after a puzzle grid has been populated is that clues only have to be written for the actual words that are used in the puzzle. In any event, for Western European languages, words and clues can be saved and reused to generate other puzzles.
CWC facilitates the writing of clues by maintaining any number of clue databases. Once clues have been associated with words in a puzzle, a menu option allows these clues to be stored (and combined with other clue lists) for reuse in the future. When editing clues in any puzzle, a window automatically displays existing word clue associations from whatever clue database has been selected.

The word/clue menu options only work in a straightforward manner with Western European scripts. Working with non-Western language scripts is a much more roundabout procedure since words in these languages cannot be directly typed into the Use Words and Use Words with Clues text boxes. Words in such alphabetic scripts must first be typed into an external plain text file, saved in Unicode (UTF-8) format, then copied and pasted into the Use Words menu. Once this is done, the word list can be saved within CWC for future use. Puzzle grids are generated as usual just by clicking on the Build Puzzle option. After the desired font is set in the Clue Properties option, corresponding clues are then directly typed into the puzzle using the Review/Edit Clues option (see Figure 5).
Lexical inventories

CWC operates with two types of lexical inventories. The first type is called Theme Lists and is in fact simple text files that contain one word per line followed by a carriage return. Theme Lists are intended for smaller vocabularies but can in fact be used to store several thousand words, albeit at the cost of fairly large file sizes. Virtually any word processor capable of producing simple text files can be used to create a Theme List. For languages using other than Western-European fonts, of course, it must be possible to save files in Unicode (UTF-8) format.

The second type of lexical inventory is called a Word List. The Basic English, Default English, and separately purchased add-on language lists are all Word Lists. These contain many thousands of items and are compiled to save space. Word Lists supplied with CWC are in lower case characters, except for proper nouns in which the first letter is capitalized. The German Word List capitalizes the first letter of all nouns. Most of the foreign language Word Lists include diacritics. If desired, missing accents can be added either directly in a puzzle grid or through the Word List Manager (see Figure 6).
Because the Word Lists are compiled, they can only be viewed and modified from within the Word List Manager. Each item in a Word List has associated with it a score value (from 1 to 100) which can be set in the Word List Manager. Word scores are used to filter the lexical items selected by the computer when automatically filling in a puzzle grid, for example, to avoid vulgarcities by assigning low values to these and setting the fill parameter to only use words with a higher value. For pedagogical purposes, this feature can be used to control the difficulty level of a puzzle. For example, if more difficult words are assigned a low value (e.g., 25) and easier words higher values (e.g., 75-100), when the minimum grid fill parameter is set to 75, only easier words will be used to create a puzzle.

The Word List Manager can convert a Theme List into a Word List for more efficient storage and assignment of score values. The Word List Manager can likewise create new Word Lists from plain text files, retaining diacritics and case features. Since it is also possible to convert any Word List into a plain text file, anyone who purchases a foreign language Word List lacking accents can convert it to a plain text file, manually insert diacritics (a task which can be considerably facilitated with the use of a foreign language spell checker), and then reconvert it back into a Word List with accented characters.

Whatever the underlying form of letters in a Word List, by default, letters in CWC puzzle grids
are displayed in upper case without diacritics. This, however, is a configurable parameter which can be reset any way a puzzle maker wishes via the Equivalent Letters menu option (see Figure 7). Character mapping equivalences are set by a very simple formula, for example, ççÇ = C (display ç, ç, Ç as C). A puzzle maker can delete or modify any of the default equivalence formulas and create new ones as needed.

Figure 7
Grid Character Displays

Exporting puzzles
In a manner similar to audio and video editors, puzzle grids and clues in CWC are saved as a project file. This allows them to be re-edited at will and exported into a variety of finished forms. Producing the final form of crossword puzzles in CWC is as easy as it can be. They can be saved in a dozen formats, including RTF, PDF, and graphics image (see Figure 8). The final form of a puzzle can be printed out in a variety of ways: with or without a header, the puzzle alone, the solution alone, with or without clues, and so on.
One of the strengths of CWC has always been the ease with which it allows puzzles to be exported for the web. Doing so requires no programming at all and is just a matter of selecting menu options. In its simplest form, a web page may just display a static image of the completed puzzle to distribute a solution via the web. However, it is also possible to generate interactive puzzles which allow users to input answers and access a virtual keyboard alphabet (see Figure 9). Moreover, the on-screen buttons which control access to these functions, as well as an optional completion message, can be customized in whatever language is being used.

Figure 9
Exporting a Web-Based Puzzle
For language teachers, one of the most significant enhancements to the latest version of CWC is the ability to directly upload puzzles to a website, have them automatically corrected online, and save and retrieve the results of students’ completed puzzles. Although web hosting existed in previous versions of CWC, it required a programmer to create the necessary external CGI scripts and a local server on which to store the files. Now all a teacher has to do is select the Mark or Submit option and then click on Upload to the web. Best of all, this is a free service offered by CWC.

If the Mark option is selected by the puzzle maker, when students click to see their results they receive their score (correct words out of total words) and see a display of their answers alongside an indication of which were right and wrong (see Figure 10). Mark option results are intended only for student self-evaluation and are, thus, only seen by students, not instructors.

If the Submit option is selected by the puzzle maker, when students click to submit their work their score is automatically sent to the teacher’s account on the CWC server for later retrieval. Unfortunately, unlike with the Mark option, instructors receive only students’ scores; they do not have access to any information about actual student responses.
**Activities (Procedure)**

For the crossword puzzle maker, *CWC* is a facilitative tool which takes all of the drudgery out of the process of puzzle creation and, for those inclined to experiment, offers a vast array of puzzle formatting possibilities. Like its competitors, *CWC* allows for the efficient production of traditional printed crosswords. However, *CWC* is in a class by itself in its ability to automatically transform puzzles into quite sophisticated interactive web pages and to manage storage and retrieval of results.

For students, the central activity associated with the output of *CWC* is of course the completion of a crossword puzzle. This is in essence an instructional procedure, specifically a special form of text reconstruction. However, by its very nature, a crossword puzzle is also very much a game and, as such, can be highly motivating. Providing that access is given to solutions and corrections, language learners attempting the online version of a puzzle can work with the computer program to flesh out answers.

The pedagogical focus of crossword puzzle activity very much depends on the ingenuity of the teacher. The most obvious, and traditional, use of crosswords is in the area of vocabulary learning, which of course also involves spelling and morphology. A less traditional, but equally valid, application, would be to use a crossword to focus on sociolinguistic content, with grid entries corresponding to answers to substantive questions framed as puzzle clues. As with the pedagogical focus of crossword puzzles, their place within the curriculum, whether they are mere distractions or central to curricular objects, depends entirely on the instructor. At one extreme, they may simply be kept in reserve for a bit of playful down time. On the other, they can be used for regular homework assignments, quizzes, or even tests.

**Teacher Fit (Approach)**

In considering the issue of theoretical approach, it must first be borne in mind that *CWC* is not at all marketed as a language-learning program. In fact, its target audience is much more professional puzzle makers (e.g., for newspapers and magazines) than teachers. There are, therefore, no implicit or explicit pedagogical assumptions underlying the program. The extent to which *CWC* fits the methodological expectations of teachers depends entirely upon how they integrate the use of crossword puzzles into their curriculum.

As Wilkins (1972) long ago remarked: *Without grammar very little can be conveyed, without vocabulary nothing can be conveyed.* While not all learning theories and pedagogical methodologies agree with according primacy to vocabulary acquisition, rare indeed would be the theorist or language teacher to dispute the great importance of vocabulary for linguistic competence.

In using crossword puzzles as a theoretically motivated vocabulary acquisition tool, it is important to understand what is involved in their completion. By its very nature, the successful completion of a crossword puzzle involves the establishment of a link between the meaning expressed in a clue and a corresponding form in the answer grid. It is a paradigm example of what Nation (2001) defines as a productive meaning-to-form retrieval activity. Getting the orthography of the form correct, needless to say, is the sine qua non of any puzzle solution and a process that reinforces bottom-up form recognition. Thus, from the outset, crossword puzzle completion engages language learners in linguistic activities demonstrably essential to vocabulary acquisition. It is, moreover, an output activity that utilizes mental processing resources to reinforce lexical encoding rather than entering into competition with it. So, too, the game-like nature of crossword puzzle completion serves to motivate learners which, in
terms of the Input Hypothesis (Krashen, 1985), can foster language acquisition by lowering the “affective filter.”

At its simplest, as when single lexeme L1/L2 correspondences are involved, crossword puzzle completion may just require the retrieval of a known form-meaning pairing, e.g., cat/chat, dog/hund. Even with basic vocabulary, however, learners very often have to use the acquired lexical knowledge reflected in correctly completed sections of a grid in order to actively construct words they have not yet fully learned. In fact, this sort of i+1 exploitation of what is known to figure out what is not is an essential part of what makes a crossword puzzle an engaging mental exercise. Aside from its motivational value, time spent on consciously reflecting on an orthographic word form and its associated meaning can make a critical contribution to successful lexical encoding.

Used for vocabulary building and reinforcement, crossword puzzle completion can be very structuralist in nature, with individual students focusing on words in isolation. In addition, if it is the instructor who constructs the puzzle and chooses the vocabulary, then the activity by definition will be teacher centered. However, students can just as easily be active participants in the creation of crossword puzzles. For example, they can be given the task of writing clues for an existing puzzle grid (a receptive form-to-meaning retrieval activity) or create entire crosswords themselves.

Students need not work on puzzles in isolation either. Since CWC puzzle grids can be printed out with vertical or horizontal solutions showing, they can be used to create paired information gap exercises. One member of a pair can be given a puzzle with the vertical word solution, the other with the horizontal solution, and the two then work together to complete the puzzle. Moreover, anyone teaching within a socioconstructivist framework can use group-based crossword puzzle creation or solving as a scaffolding device to promote ZPD activities in which learners collaboratively pool their individual skills. Whether solving puzzles or creating them, group work conducted in the target language also provides opportunities for task-based communicative activities.

As previously indicated, while vocabulary learning is the most common use to which crossword puzzles are put, there is no intrinsic reason why they cannot be exploited for other purposes. Used to draw out subject area knowledge, content-based puzzles offer fertile ground for substantive student discussions in the target language.

While most welcome and useful, the online puzzle presentation and data collection facilities made available to teachers on the CWC website are quite limited. Available puzzles are listed alphabetically in a single index. There is no way to change the index or better organize the puzzles into folders and subfolders. Likewise, student scores for each puzzle are stored in a single file in alphabetical order, with no possibility of reorganizing them by, for example, course or class.

Learner fit (Design)

Given the dual nature of CWC, as an authoring tool for teachers and source of pedagogical activities for students, the question of learner fit really needs to address both potential groups of users.

For teachers who want to learn how to use CWC, no previous puzzle making experience is presupposed. If all that is required is just the production of freeform printed crosswords, those with basic word processing skills and familiarity with the Windows environment can learn to
do so in very quick order. There is, however, one important caveat having to do with complications resulting from the use of non-Western European languages. Although these languages are much easier to deal with now that the underlying Windows OS is Unicode compliant, getting them to work properly still requires careful reading of instructions. Once the initial learning curve is negotiated, the preparation time for the creation of crosswords is vastly less than it would be if done manually. While the many control parameters CWC offers can at first appear quite daunting, all of them have preset defaults and can be ignored until such time as curiosity or necessity requires otherwise.

The progression to the production of interactive web-based puzzles can be made with the simplest of crosswords, that is, it is not necessary to learn how to make fancy puzzles first. Improvements in the font handling capabilities of web browsers over the past decade have eliminated most problems associated with the display of crossword puzzles in non-Western European languages. Nevertheless, those who read instructions first will find it far easier to get their crosswords operating properly online than those who try to just plunge into it.

From the student perspective, completing a crossword puzzle—whether in print or online—poses no technological difficulties. If students are going to be involved in the production of their own puzzles, the difficulty level of the task is essentially what it is for their instructors. In fact, it can be less so provided that templates have been created to set operating parameters such as fonts, virtual keyboards, and so forth. It is, naturally, advisable for teachers to guide their students through the process of crossword puzzle creation; this is one area where teacher-centered instruction definitely has its merits. Depending upon whether students are completing puzzles or creating them, learner control over the activity parameters can vary from nil to total.

Like teacher fit, just how well crossword puzzle activities fit a learner’s profile depends entirely on what goes into them and how they are exploited. Linguistic skill level or content difficulty level can be chosen to meet the requirements of any student, as can such features as age appropriateness and area(s) of interest.

Overall, the feedback provided to students is quite satisfactory. The response handling provided by the interactive web version of puzzles is restricted to exact string matching. However, given the highly constrained environment of a crossword puzzle, this is entirely adequate. While completing a word, students can be given the option to check their response for correctness, with wrong letters appearing with an X across them in the grid. They can also be allowed to peek at letters, whole words, or the entire puzzle solution. As a counterbalance, puzzle makers can limit the number of times students can access these peek functions. The Mark option, of course, provides a summary of the correctness of the completed puzzle.

**SUMMARY**

CWC remains the most sophisticated tool of its type for the creation of crossword puzzles. It combines enormous configurational flexibility with simplicity of use. For foreign language applications, it has the very great advantage of supporting a wide variety of foreign language scripts and being able to produce web-based interactive puzzles with virtual keyboards. For language teachers, the latest version of CWC takes the creation of online interactive puzzles several steps further by allowing them to be easily hosted on its server, automatically corrected, and the results stored for later retrieval.

As good as it is, CWC nonetheless still has room for improvement in the way it handles the creation of non-Western European language puzzles. It would profit greatly from Unicode
compliance, which would considerably simplify the process of setting fonts, creating word lists, and writing clues for these languages. So, too, access to online puzzles and storage of student results on the CWC website would profit from greater organizational flexibility. Likewise, instructors should have access to the same information about student responses as students themselves receive from their marked puzzles.

All things considered, though, Crossword Compiler is an excellent product that keeps getting better. At less than $50 for an individual copy, and less that $400 for an entire teacher network, it is a real bargain. The availability of extensive, editable, and low-cost word lists to facilitate the generation of crossword puzzles makes it all the more attractive. If you are looking for software to make crossword puzzles, CWC really is at the top of the class. Download a free demo version and see for yourself.

**Scaled Rating**

(1 low-5 high)

Implementation Possibilities: 5
Pedagogical Applicability: 5 (depending on how it is used)
Use of Computer Capabilities: 4
Ease of Use: 5 (Western European languages); 3 (other languages)
Overall Evaluation: 4.5
Value for Money: 5+

**Producer's Contact Information**

Developer/distributor
WordWeb Software (http://www.wordwebsoftware.com)
Email: info@crossword-compiler.com
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**References**


REVIEWER’S BIODATA
Jack Burston is the Director of the Language Centre at the University of Cyprus, where his activities are particularly focused on the professional IT development of teaching faculty. He is a past member of the CALICO Executive Board and longstanding member of the CALICO Editorial Board. He served for many years as the Software Review Editor of the CALICO Journal and webmaster of the CALICO Review.

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