Heuristic Evaluation of KWord

Usability study to learn about possible improvements in the user interface
February, th 2006

Author:

Chi Shang Cheng

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0. Introduction

1. Method

Heuristics, also called guidelines, are general principles or rules of thumb that can guide design decisions (Nielsen, 1990). Heuristic evaluation allows you to catch problems that task-oriented methods, e.g. cognitive walkthrough, would miss. The procedure is based on the observation that no single evaluator will find every problem with an interface, and different evaluators will often find different problems.

Not all problems will be found with this method. It is possible to detect all major problems within an interface that are "heuristically identifiable" with 3 to 5 usability experts, but they can catch 75 percent of the total heuristically identifiable problems. That is, problems with the interface that actually violate one of the ten heuristics (Nielsen, 1994).

Please note that during the evaluation no users were involved. Some of the issues are merely assumptions, but do have some ground based on the heuristics. The issues could be tested for correctness by conducting an user-based usability test with the corresponding use cases.

1.1 Heuristics

Here are the ten heuristics Nielsen (Nielsen, 1994) comprised from 249 usability problems:

Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

Recognition rather than recall

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

Flexibility and efficiency of use

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

Aesthetic and minimalist design

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

1.2 Test Setting

The heuristic evaluation was conducted on a PC running Kubuntu Linux 5.10. I have installed KDE 3.5 and KOffice 1.4.1. I have used the Plastik theme and NuoveXT 1.6.0 icon theme.

1.3 Usability Test

For each heuristic, I will address the corresponding problems/flaws I have found. I also have compiled a list of guidelines for icons, on which I will judge the usability of the icons and the corresponding buttons. Not all problems will be categorized correctly, but I wanted to keep only these ten heuristics, to maintain a convenient organization.

2. Results

2.1 Visibility of system status

2.1.1 Splash screen

Severity: low

Description: KWord is a light-weight word processing application. This allows users with fast computers start the application in just a few seconds. However, users with less modern systems have no clear indication that the computer is starting KWord.

Solution: Show a splash screen while the application is loading.

Rationale: A widely quoted paper by Robert Miller (Miller, 1968) shows that users will switch to another task when there is no response within 10 seconds. When the application gives the user feedback − in this case with a splash screen, the user will notice the delay, but has no break in thought stream.

2.1.2 Autospellcheck checks too early

Severity: medium

Description: When Autospellcheck is turned on, it will highlight all the incorrect spelled words by underlining those words with a red wave line. However, Autospellcheck also highlight words that aren't finished yet. When you are in the middle of typing a word, it already indicates that the word is spelled wrong (figure x).

Solution: Let Autospellcheck check a word for spelling errors, after that particular word has been typed completely.

Rationale: Highlighting incorrect spelled words after they have been typed makes more sense. This will remove confusion caused by highlighting early and will also make the interface less bloated.

2.2 Match between system and real world

2.2.1 Frames concept can be ambiguous

Severity: high

Description: The frames concept aims to be a semi-professional solution to accommodate users who want to have DTP software functionality. However, the goals of these users are different from the main users. DTP is aimed at designing, not writing. The users without DTP knowledge are confronted with terms that only have meaning for the other user group. Besides, users can get confused when they want to create a webpage.

Solution: Separate writing from designing. Use modes to separate the different interfaces. Introduce a design mode. Once activated, the user will only see toolbar with buttons that are relevant to designing. Make the presence of this mode felt, so that users that don't have worked with DTP software before, can also try it in a usable manner.

Rationale: There are two different user groups and therefore it's also logical to have two different interfaces. Designing sounds more task-oriented, instead of object-oriented, which will make more sense to the user. Make this design mode discoverable, encourage users to discover this functionality by providing visual cues.

2.2.2 Document structure displays wrong information

Severity: high

Description: The document structure view (figure x) shows the structure of the document. However, this structure doesn't match with the user's mental model. The structure that is shown in the panel, has information that isn't very useful to the user. It contains information about Frames and Framesets, but this tree view doesn't reflect the relationship between the headings and paragraphs for example. It has no meaning for the user, so it has no function.

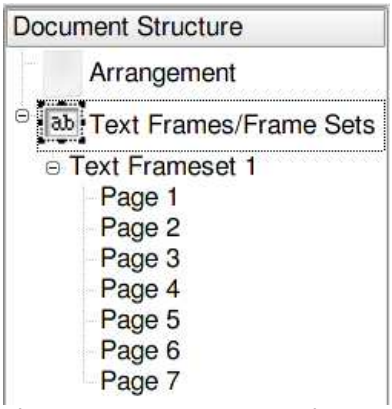


Figure x: Document structure view

Solution: Display a structure that does match with the experience of the user. Show a document structure that is meaningful. Microsoft Word does it right (figure x). Also disable the view by default. Some users do not need this kind of structure. People who write lengthy documents, such as reports, can use this view to have a quick overview of the document.

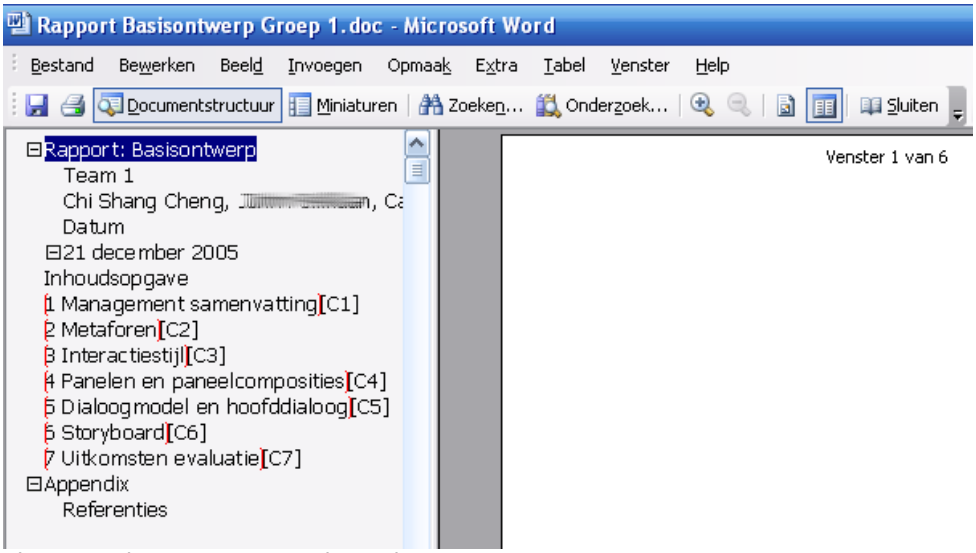


Figure x: A document structure that makes more sense

Rationale: Changing this view provide meaningful information to users and they likely are more eager to try this function.

2.2.2 Ambiguous commands in the Insert menu

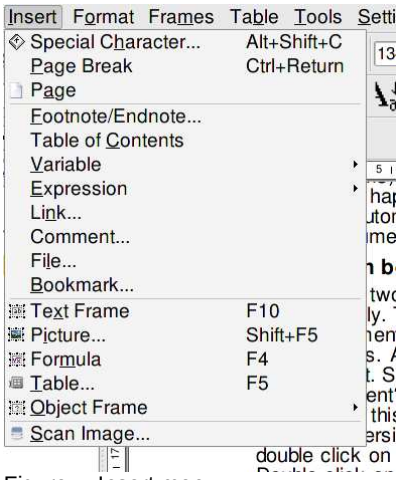


Figure x: Insert menu

Severity: low

Description: There are two commands, Page and Page Break, in the Insert menu that visually do the same thing.

Solution: Get rid of one of the two, preferably Page Break.

Rationale: Keep the user interface clean by removing two commands that do the same thing. A professional user would choose Page Break, and a beginner would probably choose Page.

2.2.3 Filepath is shown in the titlebar

Figure x: Kword titlebar

Severity: low

Description: The window titlebar shows the full path to the file as well as the filename KWord is currently working with (figure x). KDE hides the filesystem structure by using shortcuts such as system:///home. Users might not be aware how the filesystem is structured.

Solution: Show only the document title.

Rationale: Do not provide information that the user don't need. The title of the document will suffice.

2.2.4 Insert menu contains command to insert a file

Severity: low

Description: There is a command in the Insert menu called "Insert file…".

Solution: Change the text into "Insert document…".

Rationale: Speak the user's language.

2.2.5 Insert links dialog has wrong text labels for the text boxes

Severity: medium

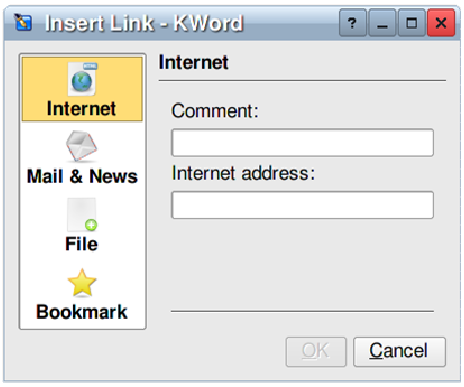


Figure x:

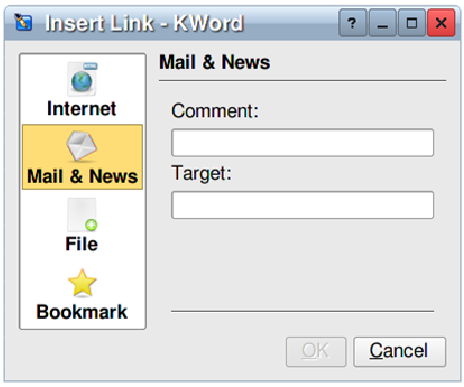


Figure x: asfsdafsdfasdf

Description: Via the Insert menu, the user can access the Insert links dialog window (figure x). When a user wants to insert a link to an internet address, he has to fill in two text boxes. One that suggest the user to type a comment and the other one the URL. Besides internet links, you can also link to e-mail addresses, links to news (I wonder what that is) and links to files.

Figure x: Insert link dialog in Mozilla Thunderbird

Solution: Use text labels that make more sense to the user. Mozilla Thunderbird does it better (figure x). Use tooltips to display helpful information instead of showing it directly as Mozilla Thunderbird does. This will make the interface less noisy.

Rationale: Speak the user's language.

Text view in Konqueror

2.3 User control and freedom

2.3.1

2.4 Consistency and standards

2.4.1 Inconsistency in text labels of tooltips on the Insert toolbar

Severity: low

Description: Some tooltips of the buttons on the Insert toolbar end with a period. Some don't.

Solution: Be consistent and remove the periods in the tooltips

Rationale: The tooltips of the buttons on toolbars should have short descriptions and therefore are not full sentences. There is no need to end it with a period, so keep the user interface clean.

2.4.2 Inconsistency in typeface icons on the Format toolbar

Severity: medium

Description: The characters in the Bold and Underline icon are in a serif font. The Italic and Strike icon are in a sans serif font.

Solution: Change the typeface of all the characters to serif.

Rationale: The serif characters will be better distinguishable from sans serif font that is used in the interface. It will also be easier to see whether a character is bold.

2.4.3 Inconsistency in use of looking glass and binoculars icon

Severity: medium

Description: Questionable use of a composite metaphor.

Solution:

Rationale:

2.5 Error prevention

Text view in Konqueror

2.6 Recognition rather than recall

2.6.1 Display modes commands in the View menu don't have affordance

Severity: medium

Description: From the View menu, you can access a submenu called Display modes. From that submenu, you can choose from three different types of display modes. However, the names of those display modes aren't suggestive. The user doesn't know what to expect and has to learn by trial and

error to find out which display modes he actually wants to use.

Solution: Place large icons next to the text labels of the menu items in the Display modes submenu.

Rationale: Use visual cues to help the user reduce memory load. The user then will be able to recognize things instead of remembering and recalling them.

2.6.2 Show previews in the Style list

Severity: medium

Description: The drop down listbox on the Formatting toolbar that allows you to select styles to apply on (selected) text, doesn't have a preview. You have to try it first, to see whether you have the desired result.

Solution: Display a preview of the styles in the Style list.

Rationale: Reduce the memory load of the user.

2.6.3

2.7 Flexibility and efficiency of use

2.8 Aesthetic and minimalist design

2.8.1 Underline icon suggest also another action

Severity: medium

Description: The Underline icon displays a character that is italic and underlined.

Solution: Don't make the character look italic.

Rationale: When the character is both italic and underlined, the user might assume that when he clicks on it, the corresponding actions will be executed.

2.8.2 Strike icon too shiny

Severity: medium

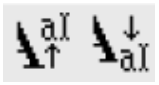
Description: The Strike icon is too shiny, which makes it more difficult to easily distinguish the character 'S'.

Solution: Make the icon look less shiny.

Rationale: Icons should be easy distinguishable for the user.

2.8.3 Too much information in subscript and superscript icons

Severity: medium



Description: The Subcript and Superscript icons in the Formatting toolbar contain extraneous information, specifically the arrows and cursors.

Solution: Remove the small arrows and cursors in the icons.

Rationale: Displaying the arrow is unnecessary, because the icon already suggest that the cursor is going up. There's no need to give that information twice. The cursor shouldn't be showed in that icon, because it would mean that you also have to show it in the Bold, Italic etc. icons, which is unnecessary.

2.8.4 Extraneous information in bold, italic and underline icons

Severity: medium

Description: The characters that are placed on top of a button, as if it was a key on a keyboard. This has several implications. First of all, when you click on the button on the toolbar, the 'inner' button isn't pressed. This can be confusing to the user. Second, because of the orange colored border of this button (or key), it doesn't like a real world key. This makes it more difficult to understand what this thing actually is. Abiword also places the characters on keys, but does it in a better way: it doesn't have an orange colored border.

Solution: Make the icons look as simple as possible. Show only the characters to enhance the mapping of the icons.

Rationale: When you provide extraneous information in icons, it will complicate the mapping of the icon. This means that it will be more difficult to understand what the button will do.

2.8.5 Print preview icon doesn't have much affordance

Severity: medium

Description: The Print Preview icon displays a printer with a small lightning strike. The lightning strike isn't a good metaphor for the desired command.

Solution: Match the user's mental model. Use an icon that an user has already seen before, for example the icon from Microsoft Word.

Rationale:

2.8.6 Extraneous information in icons on Insert toolbar

Severity: medium

Description: There is extraneous information in the Insert icons on the Insert toolbar. For instance the Insert picture icon. Besides an icon of a picture, you can also see a frame. The user shouldn't be confronted with the information that the picture is actually inserted into a frame.

Solution: Remove the frames in those icons.

Rationale: Provide information that makes sense for the user.

2.8.7 Unusual placement for document canvas

Severity: medium

Description: The (virtual) paper is placed rather odd on the document background. Instead of centering the paper, it is aligned to the left with no space between the edge of the background and the paper. This makes it more difficult to visually distinguish the size of the paper and also more difficult to estimate margins and other white spaces.

Solution: Centre the paper.

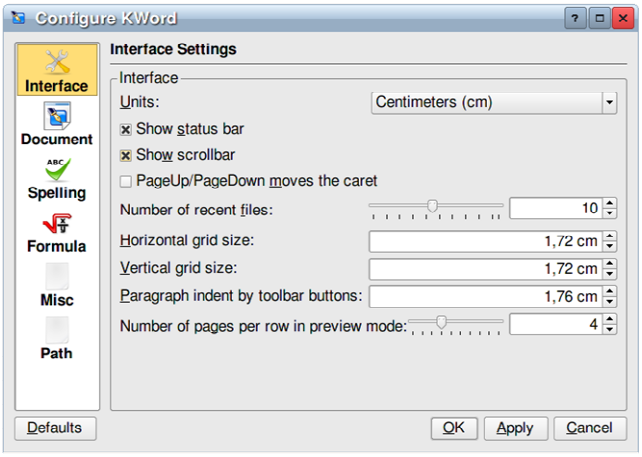
Rationale:

2.8.8 Widgets aren't positioned well in the KWord Settings dialog

Severity: medium

Description: When the KWord Settings dialog is showed at its default size. The widgets aren't aligned well. This is even worse when the window is at its minimum size.

Solution: Align the interface elements, so the user will be able to easily visually distinguish the various items.



Rationale: Make use of the Gestalt principle continuity. This improves the visibility of the UI.

2.8.9

2.9 Help users recognize, diagnose, and recover from errors

2.9.1 Too much information in the crashed dialog

Severity: high

Description:

Solution:

Rationale:

2.9.2 Unavailability of a Help center

2.10 Help and documentation

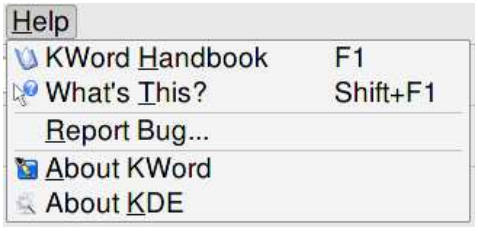
2.10.1 Wrong text label for KWord's User's Manual in the Help menu.

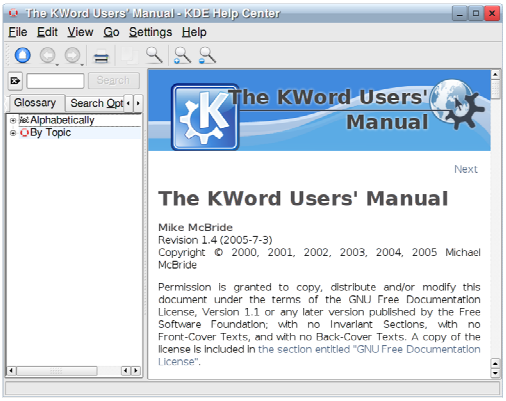
Severity: low

Description: The menu item KWord Handbook is shown in the Help menu. However, when you click on it, a window pops up titled KWord User's Manual.

Solution: Change KWord Handbook into something like User Manual. Emphasize the fact that it is simply a manual, not a help center or a knowledge base.

Rationale: Make the command look as unambiguous as possible. The user will be less likely to guess what the following action will be then, instead of guessing what It could be (out of the ambiguous possibilities).





2.10.2 Availability of Table of Contents

Severity: high

Description:

Solution:

Rationale:

2.10.3 Wrong use of composite metaphor

Severity: high

Description: Inconsistency with looking glass icon.

Solution:

Rationale:

Text view in Konqueror

3. Conclusion

The aim of the study – a heuristic evaluation – was to get a first impression of the usability of KWord. It was tested purely based on heuristics, rules of thumb that are applicable to an interface.

The issues that were found, were in general small and doesn't require much work to correct. These are corrections in things like text labels, tooltips and icons. Most of them can be fixed in time for a bugfix release.

There has to be said that this was not an in-depth evaluation. Certain dialogs that involves complex tasks such as Print Preview and the Style Manager require heuristic evaluation and user testing. The reason for this is that KWord is largely based on well established word processing software such as Microsoft Word and OpenOffice.org. However, there are some details and dialogs that are quite different from their

References