Timeless and Multi-Platform Teaching of Word Processors

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Abstract: Many of the everyday habits of the person today have been moved to the digital world. One of these is the production of written speech, where traditional media such as pen and paper have been replaced by word processors.

However, the plethora of products found on the market, as well as the constant changes that take place in their environment and their functionality, have some consequences, including a difficulty in the educational process, since the teacher must constantly modify the teaching subject. Three solutions are proposed to solve this problem, firstly the adoption of a template, secondly the finding of common features between the different products, and thirdly the development of educational software that simulates the operation of modern word processors.

Key words: digital education, word processor, software compatibility

1. Introduction

The everyday life of the average person is very different from that of a few decades ago. The main reason for this rapid change is Information and Communication Technologies (ICT). Almost all of us now have access to a computer or similar device, and over 4 billion users are connected to the Internet, taking advantage of the services it offers to work, train, communicate, and entertain. Many of our habits have changed drastically, such as the way we shop, the way we find our destination when we travel, the way we are keep up to date with developments, and more.

One of the changes occurred, and which can not be considered insignificant, it is the way in which we write, that is, the way that we produce written speech. The use of pen and paper has given way to typewriters, at least in official documents, but today with the widespread use and direct access to computers, the production of text is mainly done with the help of specialized software, the word processors. Word processors offer possibilities for writing, enriching text with other media (images, charts, tables, etc.), and formatting. Today, they are used to create formal and informal documents, such as administrative decisions, laws, books, magazines, school and student assignments, essays, reports, etc.

The almost universal use of word processors for the production of written speech caused, as a natural and consequential, changes in education. Thus, today the teaching of the use of word processors is found in primary (VanLeeuwen & Gabriel, 2007), secondary, post-secondary (Eisenberg & Johnson, 2002), higher, and adult

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education, in many educational systems in the world, with many teaching hours devoted to this subject. However, despite this large investment in teaching hours, a large part of the population seems to remain "illiterate" in the use of word processors, as it not only ignores the vast majority of the possibilities offered by such software, but also produces texts lacking aesthetics, violating some editorial rules, as Csernoch (2009) notes in her research, examining texts from inexperienced and experienced word processor users.

The inadequate and unsuccessful education of the population in the software that is the main means of writing, and which is proving to be necessary for almost everyone, regardless of age, occupation, and income, is due to many reasons. Some of these reasons are the persistence of a part of the population in using traditional media for writing, the depreciation that accompanies office applications courses in education, the non-strictly defined curriculum in this subject, the use of non-specialized educators, etc. Perhaps these reasons include the large number of word processors encountered in the market, and this is because each one uses its own layout in the work environment, it gives access to the same commands in a different way, outperforms or lags behind others in specific tools. In addition, it should be borne in mind that each of the word processors, as a matter of course, goes through a process of evolution over time, which sometimes leads to so many changes in the environment and operation of the program that it makes the customization difficult even for experienced users. Such as had occurred with the transition from MS Word 2003 to MS Word 2007, where because of the many differences presented a large number of users were unable to use the new product (Moeti et al., 2010).

This work presents the problem of differentiating work environments, the difference in functionality between word processors, as well as the discontinuity that sometimes arises from their evolution. Outside the clarifying of the problem, proposed solutions which focus on teaching proper use of word processors, independent of software developments and platform. The rest of the paper is structured as follows: Following is listed a related literature that discusses the need for word processors, as well as problems that accompany them. The focus is then on the differentiations of the most important word processors in the market, in order to understand the problem that the present paper attempts to identify and address. The problems that arise from differentiations in word processors are then discussed. Next some solutions are suggested and finally the paper is summarized.

2. Related Work, Bibliography

The use of word processors in the educational process has been studied since their first years of use. For example, the work of Hopwood (1989) examines the effects of integrating word processors into learning English as a second language. In his study, Bangert-Drowns (1993) finds that the use of word processors frees writers from the concerns of calligraphy, error correction, and text modification, thereby promoting the production of larger texts and improving their skills.

Also, Beck and Fetherston (2003) studied the integration of word processors in learning writing in Primary Education, observing and interviewing a group of students who wrote text using the computer and the traditional way. Similar conclusions were reached by AbuSeileek (2006), by conducting a similar study in Higher Education, involving two groups of students, one of whom used a word processor in teaching writing while the other did not. The results showed that the computer-using group was rated much better than the other at the end of the semester. Two more work demonstrating the increasing integration of word processors in the educational process, notably in writing instruction, are those of Al-Jumaily (2015) and Yilmaz and Erkol (2015).

On the other hand, there are some papers that point out the problems that accompany the use of word

processors. For example the commentary on Linke (2009), which presents the errors involved in importing data into databases, in writing scientific papers, etc., from the word processor auto-correction tool.

It is worth noting that with the significant development of network infrastructures in recent years and improved accessibility, both spatial and bandwidth-related, there has been an increase in the penetration of online word processors such as Microsoft Word Online, Google Docs, etc.

From all of the above, it is understood that word processors are software of particular importance because it has essentially transferred the written speech into the digital age. It is not only used for writing formal and informal documents, from scientific works and state laws to social event invitations and advertising posters, but is also used as a tool in the educational process. Their importance necessitates their use by the whole population, and is considered self-evident even for inexperienced computer users.

3. Diversification in Work Environments

Because of their importance, word processors should not be treated merely as a category of software, but as tools for capturing human thinking, culture, and communication. Therefore, it should be ensured the effortless use, just as was in the case of pen and paper a few decades ago.

But as already mentioned, according to Csernoch's (2009) observations, anything other than trained in word processor can be considered the global population. Apart from any other reasons for this, the present work focuses on the variations encountered in the different environments of text editors, both in terms of different platforms and different periods. It is assumed that this differentiation is an obstacle to learning and universal use of word processors.

Many variations can be identified, related for example to symbols used, such as those of the simple font formats shown in Figure 1.

(a)   (b)   (c)

Figure 1 Bold, Italics, Underlines, Etc, Text Formatting Buttons in (A) Microsoft Office Word 2019, (B) Libreoffice Writer 6.3, And (C) Abiword 2.0.

The differentiation of Figure 1 can be easily be perceived and translatable to the eyes of a relatively experienced user, but on the other hand it may cause inconvenience and considerable loss of time for familiarization to an inexperienced user, with the latter trying to avoid producing a written speech using a word processor if the software he/she is familiar with is not available.

But apart from these superficial differences, others are also found that would make it difficult for more experienced users. One such is the insertion of a table, an object that is found in many types of documents.

Figure 2 shows that a different policy is followed regarding user access to table insertion commands.

Another basic action in which there is a distinction between text editors is page formatting. Figure 3 shows how to access page formatting commands for some known text editors.
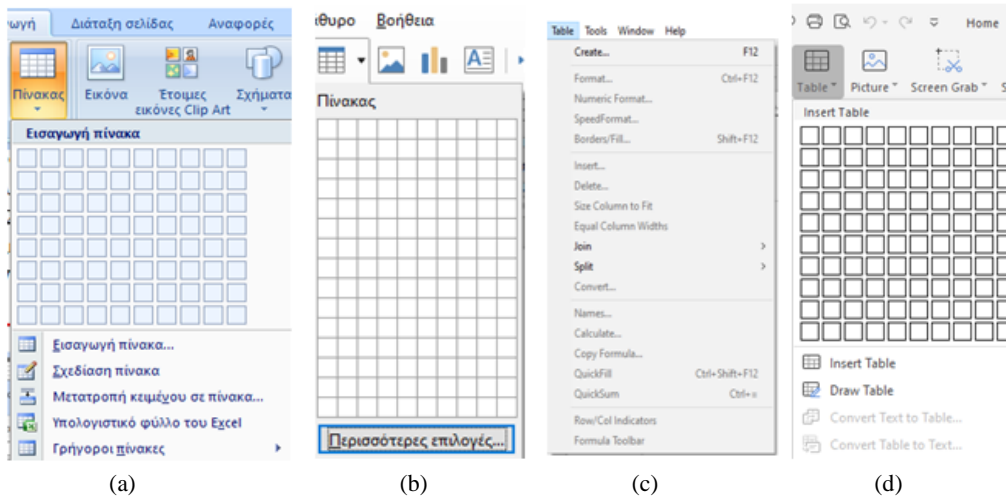
(a)   (b)   (c)   (d)

Figure 2   Table insertion in (a) Microsoft Office Word 2007, (b) LibreOffice Writer 6.3, (c) Corel WordPerfect X9, and (d) WPS Writer.
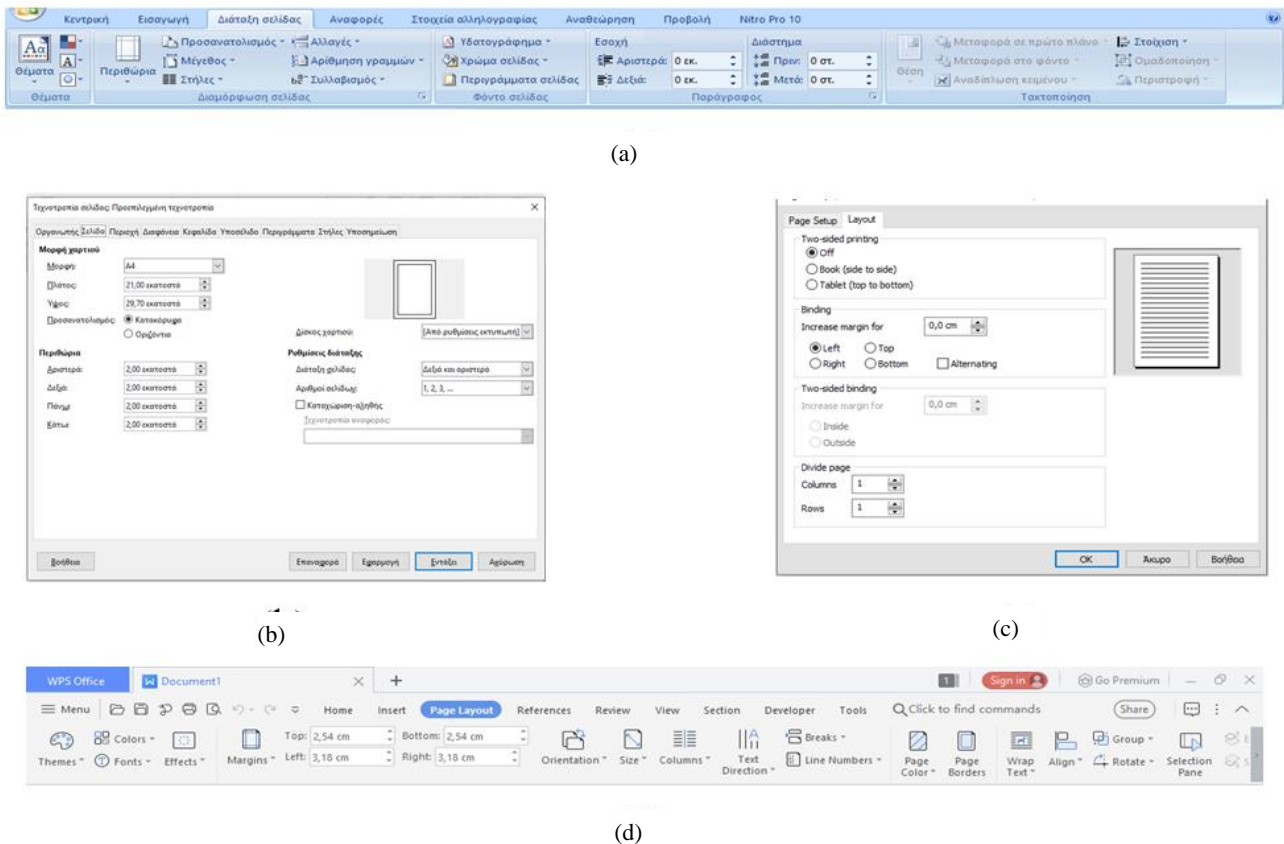

(a)

(b)

(c)

(d)

Figure 3   Page layout in (a)Microsoft Office Word 2007, (b) LibreOffice Writer 6.3, (c) Corel WordPerfect X9, and (d)WPS Writer.

Although only a few points have been shown where there are significant differences between word processors, the average user can discover much more, which is also shown in Table 1.

At Table 1 are imprinted the capabilities of the current version of each word processor, and the question mark

(?) indicates that the specific function for that word processor is achieved with the help of plugins.

Table 1   Word processors characteristics comparison.

Word processor	Grammar checker	Cross referencing	Bibliography	Mail merging	Smartfont typography	Math support	Conditional text	LTR/RTL
AbiWord	✓	?	?	✓	✓	✓	?	✓
Adobe FrameMaker	✗	✓	?	✗	✗	✓	✓	?
LibreOffice Writer	✓	✓	✓	✓	✓	✓	✓	✓
Microsoft Word	✓	✓	✓	✓	✗	✓	✗	✓
OpenOffice Writer	✓	✓	?	✓	✓	✓	✓	✓
WPS Office	✓	✓	✓	✓	✓	✓	✓	✓
WordPerfect	✓	✓	✓	✓	✗	✓	✗	?

Source: https://en.wikipedia.org/wiki/Comparison_of_word_processors

4. Emerging Problems

The situation described above is that the average user is familiar with a word processor, which is usually the one installed on their personal computer or computer in their workplace. The result is the difficulty of working comfortably in a different word processor, mainly due to the differences in the working environment and access to commands, at least as highlighted in the previous section. Although this is the first time this problem has presented in the literature, at least as far as we know, it seems to have preoccupied Internet users (Word processing challenges, n.d.), where the extra effort to produce the same document with different text editors by a user is recognized.

There are several consequences of this differentiation, the most important of which, according to the focus of this work, is the complexity introduced into the educational process, as the teacher is called upon to teach the execution of an action trying to cover all the different environments which the trainee may be confronted. Also, as a consequence can be considered the man-hours needed to familiarize the staff of an organization or a company in a new software or new software version. Still, where commercial software is used, continuous updates to new versions burden the individual, corporate, or state budget.

At this point it should be noted that the different way of accessing the same commands, is general phenomenon in many applications but special attention should be paid to word processors because of the necessity of their usage.

5. Proposed Solutions

The next step after defining and clarifying the problem is to submit proposals for its solution. These include first the creation of a standard, second the finding of operations performed in the same way by all word processors, or at least most of them, and thirdly the creation of independent software that can be sufficiently used for educational and professional purposes.

5.1 Create Standard

Many high-tech products and services have adopted standards for both compatibility and interoperability so that a user can seamlessly combine one company's products with those of another, as well as collaborate or communicate with another user who owns another company's hardware and/or software. A typical example is the

standards adopted in network technology (OSI/ISO, TCP/IP, etc.) that resulted in the communication between different hardware, software and architecture devices.

Accordingly, a standard will define the working environment and operations of a word processor. Clearly, any company or organization will have the right to implement as it wishes its product or products, within or outside the standard. However, if it wishes to comply with the standard, in which case the product will be accompanied by a corresponding certification, it will be required to comply with the agreement. The consequence of creating a standard will be the development of a specific word processor learning curriculum, which will be distributed according to the education levels.

Three additional points that need to be mentioned in terms of creation of a standard. Firstly, the template must provide the function of the "basic" word processor. A "basic" word processor is one that performs all the actions that could be achieved, as a final result, by using traditional media such as pens, paper, scissors, glue, etc. These actions include writing any text by entering any symbols, formatting of characters, paragraphs, and pages, inserting and formatting bulleted and numbered lists, headers and footers, inserting and formatting tables and images, etc. In contrast, traditional media could not achieve to insert hyperlinks, animations, audio and video items, etc. Secondly, in standard word processors are suggested to be available free of charge, while companies will be able to offer additional services at a fee, either using add-ons or another product. Thirdly, all in standard word processors must produce files of the same type, or enable to produce of a multitude of different file types, compatible with all commercially available text editors.

5.2 Finding Common Operations

Another solution, which only looks forward to the training process, is to find the operations performed in the same way by all word processors, or at least by most of them. The goal is to develop a curriculum that aims to teach these common operations, so that learners will be able to handle the software on the one hand, and on the other hand to have a view of the functioning of all available word processors, and thus be able to perform in-depth product comparisons.

It should be noted that as long as every company and organization is not limited by any contract can develop its product with its own design. In addition, new requirements will arise, and in general it is certain that word processors will evolve, either to meet the needs of users (Wogalter & Cowley, 2009) or to provide an innovation that can attract more customers. This means that over time the number of common operations will fluctuate, and therefore an update of the aforementioned curriculum will be constantly needed.

5.3 Creation of an Educational Platform

Alternatively, the problem that this paper deals with can be solved by developing an application that has educational purposes and satisfies the conditions described in the previous solutions. That is, it implements the "basic" word processor, produces files compatible with commercially available products, and prepares the trainee for his or her work on any corresponding software.

The application should have all those features that have modern text editors, the exploitation of which are skills of a user in producing electronic documents.

For the purposes of this study, software has been developed that meets the above descriptions.

6. Summarizing

Word processors are software of particular importance because they are the modern way in which written speech is produced, so everyone should have free access to and knowledge of their handling. Today, one can find on the Internet dozens of word processors, either free or for a fee. Each of them has different capabilities, different work environments, and different ways of accessing the same commands. In addition, each of them goes through a maturation period, during which it modifies some of its characteristics. Consequently, the user in his/her attempt to produce a written speech is faced with a multitude of products with different appearance and characteristics, which are even modified over time.

The present paper deals with this problem. That is, the differentiation between appearance and functionality between word processors, which in turn results in difficulty in the educational process, discouraging the population from using them, and spending money and hours on continuous updating.

As solutions are proposed firstly the establishment of a standard that will ensure some minimum agreement among the different products found in the market, secondly the searching and finding of the common operations of word processors with a view to drawing appropriate educational program aims at comprehensive training and, thirdly, the development of an educational application that will include all those common capabilities of at least most word processors.

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