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Digital Collective Writing: Concepts, Characteristics and Technologies

Escrita Coletiva Digital: Conceitos, Características e Tecnologias

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Abstract

Digital Collective Writing is a practice that has expanded significantly in different levels of education and professional environments. This study presents the concepts that define this type of writing, identify main characteristics and point out some technological possibilities that support this form of text. Regarding the concept, several authors who deal with the theme and related terms were considered. The characteristics identified showed the specificities of Digital Collective Writing and, finally, the technological resources presented the range of possibilities available to users interested in this practice.

Keywords: Digital collective writing. Technological resources. Text production.

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Escrita Coletiva Digital: Conceitos, Características e Tecnologias

Resumo

A Escrita Coletiva Digital é uma prática que tem se expandido de forma significativa nos diferentes níveis de ensino e ambientes profissionais. Este estudo tem como objetivo apresentar os conceitos que definem esse tipo de escrita, identificar suas principais características e apontar algumas possibilidades tecnológicas que sustentam essa forma de produção textual. Em relação ao conceito, foram levantados termos correlatos considerados por diversos autores. As características identificadas evidenciaram as especificidades da Escrita Coletiva Digital e, por fim, os recursos tecnológicos apresentaram a gama de possibilidades disponíveis aos usuários interessados nessa prática.

***Palavras-chave**: Escrita coletiva digital. Recursos tecnológicos. Produção textual*

1. Introduction

The writing process is usually not a simple task. The author needs, among other actions, to define the structure of the text, the themes to be addressed and support the writing with the research he deems necessary. When writing becomes a collective activity, the challenge can be even greater, given the need to overcome possible difficulties arising from social relationships. The main characteristics of collective textual production are the multiplicity of voices, the articulation of ideas from various authors, the dynamics of negotiations and agreements in the face of different points of view. For this reason, communication between the group needs to be favored so that the discussions can pass, so that the obstacles are as small as possible and favor the chain of agreements and ideas between the authors.

Currently, subjects who propose to write collectively find it easier to interact with their peers in digital technologies. Online communication, commenting, change logging and sharing tools are some of the facilities that are often available in online text editors. In this scenario, Collective Writing becomes digital and can achieve better results if participants appropriate technological resources and support writing in planned strategies for its development.

Given the above, this article aims to present the concepts that define and sustain Digital Collective Writing, its main characteristics and the types of technologies that can support this practice.

2. Digital Collective Writing: Concept

In the literature, many authors deal with Collective Writing from the use of several related terms, such as: collaborative writing (LOWRY et al., 2004; SCHÄFER et al., 2009; BERDUGO, HERRERA and VALDIRI, 2010; CALVO et al., 2011; SANZ and ZANGARA, 2012;), online collaborative writing (SÁNCHEZ, 2009), collective writing (PRIMO and RECUERO, 2006) and collaborative authoring (BENSON, 2012). However, they understand this activity in an analogous way, considering that it is necessary for a group of people to work together to build a text. For example, authors Lowry et al. (2004) define Collaborative Writing

as "... an interactive and social process that involves a team focused on a common goal that negotiates, coordinates and communicates while creating a common document". Calvo et al. (2011, p. 2) add that "it is a cognitively and organizationally demanding process. As it deals with a distinct form of group work, it involves a wide range of collective activities, multiple roles and subtasks".

Schäfer et al. (2009), understand that the "proposed collaborative writing in a digital environment is based on interaction, allowing the student to develop several skills, both related to personal skills and those related to productivity and cooperative work". In this sense, Sanz and Zangara (2012) state that "just as in collaborative activities in general, it seeks to provide spaces in which the development of individual and group skills takes place based on specific objectives that encourage collaboration and the exchange of information and strategies among the members of a work team". Likewise, for Benson (2012), collaborative authoring is the act of writing in the moment with another person, either in the same physical space or, through the use of technology, in the same virtual space.

Given the wide conceptual variety with which the authors approach the use of this terminology and, also, considering the increasingly widespread use of digital technologies, this study understands Digital Collective Writing (ECD) as the construction of a text developed by two or more authors using digital technology. Given the flow of textual production, it is important to understand the elements that surround this practice both to obtain better performance and to mediate and guide the textual production of a group of authors.

3. Characteristics of Collective Digital Writing

Writing, one of the oldest forms of expression, has been taking on new formats that are structured in different ways to meet the needs of digital media. In this changing scenario are, for example: online newspapers, wikis (they are collaborative websites that can be modified by users), blogs (online diaries), social networks, among others. Overall, digital tools are helping people around the world to explore new possibilities for communication, instruction, and writing guidance. According to Smith (2018) the results are being encouraging. Authors are being able to share, collaborate, manage and use informative reference bases that qualify the texts produced. According to Smith (2018), 758 fourth and fifth grade students from public schools in Milton (USA), experienced a collaborative writing experience for four weeks and, in that time, produced 2,245,621 words. According to the curriculum coordinator, there has been a huge improvement in students' ability to write effectively and efficiently. It is noted that this new situation requires the individual to have the ability to write both to build and socialize texts, and to take a critical stand on matters of interest.

According to Castilho et al. (2007), writing is moved from the dimension of individual authorship to the scope of collective construction, where knowledge and panoramas come together to build a richer, deeper and more plural work. For Schäfer et al. (2009), it is noted, in such perspective, the possibility of building a new conception of written language, favoring expression, understanding and communicative efficiency. Therefore, Collective Digital Writing (ECD) takes with it possibilities not limited by conventional writing, linked to paper and pen. This means that writing collectively with the support of digital technologies implies knowing the main characteristics, represented in Figure 1, that involve this process, which can be decisive for pedagogical planning..

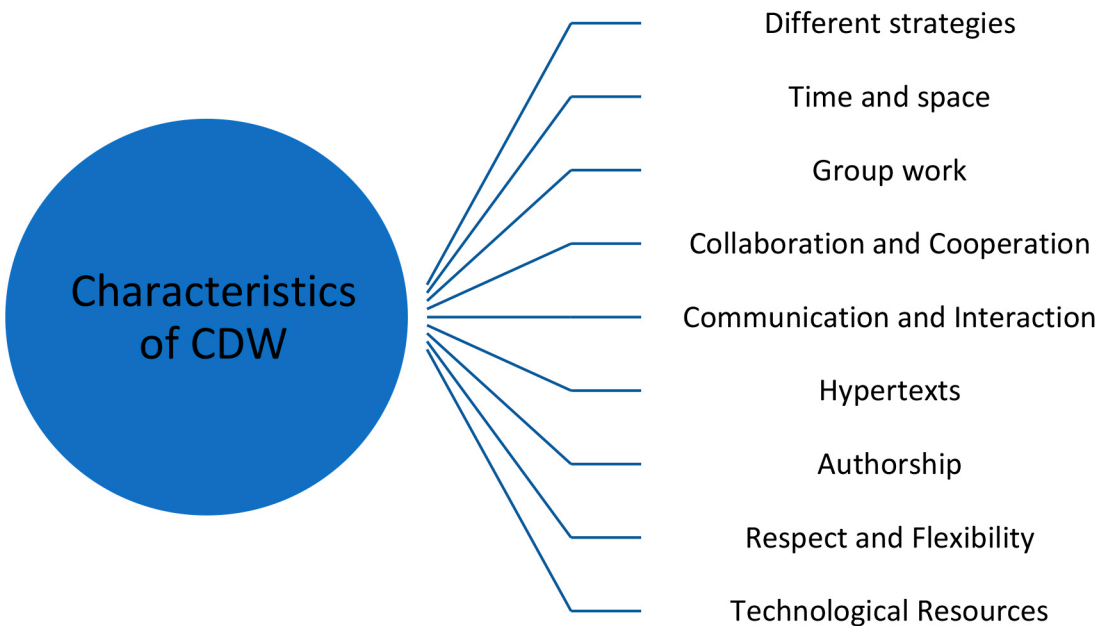

Figure 1: Main characteristics of Digital Collective Writing

Lowry et al. (2004) emphasize that, based on the desired writing task, this can include the possibility of "different strategies", among them is the way of writing, of carrying out the activity, of text management approaches, of defining the roles of the group, demand or not in the use of multimedia resources, interaction with colleagues, previous studies, time for textual production and ways of working.

"Time and space" are also important and flexible aspects, as the tasks can be coordinated by the authors, considering their availability and favoring the group's autonomy of timetable for textual production. Likewise, authors can be in different or the same locations.

From the point of view of "group work", Calvo et al. (2011) highlight that this involves a wide range of activities, varied functions and subtasks. The authors point out that groups need to interact to focus on planning and textual production. In the initial phase, the CDW offers opportunities for collective brainstorming that can be carried out through interaction and comments on the purpose of textual production, a fact that can facilitate the emergence of ideas and help in the beginning of the construction of the text.

Forming groups and keeping them interacting can be challenging. There are some strategies for the constitution of groups, such as by affinity, common interests, organized by the teacher, among others. However, many are undone along the way for a number of reasons. It is believed that the consistency of interactions between group members needs to remain in motion for the cdw activity to have segment.

"Collaboration and cooperation" are also hallmarks of the CDW process and group work. Although they have different meanings (PIAGET, 1973, CAMPOS et al., 2003 apud ARGYLE, 1991; BEHAR et al., 2009, COSTA et al., 2015), both produce good results in relation to learning, as they encourage the establishment of relationships among the participants.

Other characteristics of CDW that, in a way, are implicit in the processes of collaboration and cooperation are "communication and interaction". For the authors Hornbæk and Oulasvirta (2017), this concept, from the point of view of dialogue, sees interaction as a cycle of communication actions channeled through input/output from the machine perspective, or perception/action from the perspective human. In turn, communication favors the means by which interaction can be carried out, in which times and/or spaces.

In Digital Collective Writing, interaction can be facilitated by different means of communication, in order to promote exchanges and negotiation between group members about the text they are building. Both interaction and communication are essential so that textual production can be directed. If there is no dialogue aimed at organizing ideas, the text runs the risk of being discontinued or even being completed without meeting its objectives.

The evolution of technologies added new possibilities for the presentation, reading and writing of texts, such as the case of the inclusion of "hypertexts". Its essence is in establishing links to different elements, such as pages, images, videos, among others. For Ellwein and Kfour (2015), writing became more fluid and dynamic, allowing the text to have greater transience and changeability.

The aspect of "collective authorship" is another important element in CDW. Producing texts collectively allows participants to reflect on their writing and that of others, as well as intervene in the text of the other, modifying, deleting and inserting new passages. There are two points that deserve reflection when addressing the collective authorship of a text: the difficulty of writing and the benefits acquired by the authors when putting this activity into practice.

The difficulty is often linked to the lack of related studies and the increasingly common practice of making copies of ready-made texts from the Web. On the other hand, CDW can bring benefits, as it favors the unification of knowledge of a group and not just fruits of a particular member. Vivacqua and Garcia (2011) also point out that, "solving a complex problem often requires a combination of skills that is only obtained in a group, as the group has more skills than a single person. [...] makes the burden of smaller work for each participant individually and some tasks can be performed in parallel." (VIVACQUA; GARCIA, 2011. p. 35).

Another characteristic of CDW is the "respect and flexibility" to enable activities to be developed in a harmonious and malleable way. When writing is done collectively, it is necessary to negotiate points of view, coordinate activities and manage possible conflicts. Thus, understanding that other people can add value to work and considering the simple need to achieve a certain goal are two aspects that can be motivating for group work.

The use of "technological resources" in Collective Writing grows as technology itself advances. For the authors Berdugo, Herrera and Valdiri (2010), in the field of collaborative writing, several sophisticated tools are being integrated into e-learning systems for textual revision and co-editing. According to the authors, "these tools have evolved from simple collaborative text editors... to more complex platforms (e.g. Writeboard, Google Docs &Spreadsheets, Zoho Writer, CoWord) that offer a high level of interactivity thanks to communication systems in real time." (BERDUGO, HERRERA and VALDIRI, 2010, p. 356).

Currently, many collective editors are being made available on the Web, each with its own set of tools that sometimes resemble traditional offline editors, but add resources for interaction and communication. Some publishers, such as Google Docs, Word On-line, Collective Text Editor – CTE, are examples of digital environments online.

Based on the characteristics described, it is clear that the possibilities of approaching CDW have been growing and being modified and, with them, digital technologies have also been improved.

Therefore, it can be expected that the role of characteristics and how they are combined will vary depending on the different sociocultural contexts, resources and educational goals. Not all elements must be present in all collective writing activities. Some features may occur more frequently and new elements may emerge from studies in different contexts and/or subjects.

4. Technologies for Collective Digital Writing

Knowing the technologies that enable CDW is essential to identify the possibilities and limitations of each publisher. This section presents the analysis of features and characteristics, considering the aspects that can facilitate the development of CDW. In general, editors aim at the collective writing process, offering several resources that favor text editing, version control, insertion of comments and interaction with group participants.

Both in the corporate and academic areas, these technologies are frequently used, especially those made available online, which make access easier and work more dynamic. Its use makes it possible to carry out various activities, benefiting different areas and purposes, whether in the preparation of letters, reports, articles, magazines, newspapers, books or any type of textual production. In this way, they enable the practice of writing through individual or collective expression, favoring an interactive process between user - user and user - text.

With regard to writing the text, editors can contain spelling and grammar checkers, elements that enable text formatting, the inclusion of links, tables, images, among others. In this context, it is also possible to find editors that make use of pedagogical agents and Recommendation Systems that can indicate references for writing. Regarding interactions, they can provide tools that facilitate communication, such as sending messages, text comments and chat features.

Among the digital technologies found are the following: Google Docs, Word Online, ZohoDocs, Etherpad, TitanPad, Penflip, Quip and CTE. All are online collective writing environments that are distinguished by features, usability and interface aspects. It is important to point out that the list of editors is not limited to those described above.

The best-known online publisher is Google Docs. It is possible to develop shared texts simultaneously. Its interface, like other online editors, is similar to that of offline editors. Therefore, its use is presented in a more simplified way, in view of the feeling of familiarity with the tool. In addition to the traditional text formatting tools, Google Docs also stands out for its grammar and spelling correction features, voice typing, installation of add-ons - which refers to the integration of new functions implemented by Google's partner companies and the option to explore references.

Microsoft Office reproduced an online version, called Word Online, of its suite of applications that were used only from a local (desktop) installation. This does not yet include all the features of the desktop version, but it offers many features, among which the following stand out: a) share writing and perform it in real time; b) perform a quick search for a tool or function through the "Tell me what you want to do" space; c) allow the system to read written text by voice and adjust accessibility options (font size, background color and spacing between text); d) insert mathematical equations in ink, i.e., preferably through a touch sensitive device, it is possible to write mathematical equations by hand, then convert them into text; e) perform a smart search. The latter allows the user to select a word from the text and with the right mouse button click choose the "Smart Search" option. Word On-line will perform a search on the text selected primarily using the Bing search engine.

ZohoDocs is also part of a platform that integrates other tools in which it allows the creation of texts, spreadsheets, presentations and folders. Among the main features are the wide range of options for formatting text, chatting with group members, inserting specific fields such as date, author name, document version and a set of tools for working in groups. Of these, we highlight the possibility of notifying authors regarding changes made to the text, blocking/enabling for editing the selected text, inclusion of masks, that is, texts that only the user who added can view and set a color for the text be tagged according to each user.

Another possible editor is the EtherPad, which allows the creation of texts collectively and in real time. It can be customized and installed to meet a specific need, such as integration into other systems, or it can be used through some servers that have publicly available instances. Basically, its functionalities are summarized in resources for text formatting, adding comments, chatting with the text members, exporting the text in different formats and a version control. In particular, in this last resource, it presents a timeline that shows all the changes made to the text and for each user. It is possible to integrate other options and, for that, there are plugins available on the site itself that allow you to customize the editor and expand the possibilities of use.

Another feature is the TitanPad. This is a basic text editor that has text formatting, chat, simultaneous writing and version control features. As it is a single instance, that is, it works in a single location, anyone can access it and create a new shared text. Each text has its own address (URL) and, with that address, anyone can edit it and chat with the participants through chat. Different users' texts are marked with different colors. Text saving is automatic, but there is an option for users to save versions at specific points in the text, that is, when it is more convenient to do so. The version control used by TitanPad is the same built for the EtherPad.

Another possibility is the Penflip editor which is a platform for creating writing projects. Among the types of projects are: textbooks, e-books, technical documentation, among others. It works with content in Markdown format which means written text will be turned into HTML. Throughout its edition, the user can insert markings in titles, lists, tables, for example, and in the preview version, see the formatting changes made. It allows simultaneous collective writing, but it requires the recording of the text to be performed manually by the user. Changes to the text can be moderated by the document owner through a history check to verify versions.

Penflip's editor interface is very simple, having only a few buttons and a side menu to access extra features, such as viewing HTML text, saving, sharing and changing theme (color only). To access the text version, the user can access the Penflip Dashboard, that is, a control panel which, in this case, presents information on the text versions and pending changes, group members visualization and chat.

There is also the Quip editor, which is very similar to Penflip as it also works with content in Markdown format. Formatting options are available in a bar above the text. In the side menu, you will find the version history, as well as a space to chat with the members of the text. In this editor there is the possibility to insert images, spreadsheets, comments and other formatting functions. Beside each paragraph it enables a quick access button to a set of options to format the text. Sharing can be done by searching for other users already registered with the editor (by name or email) or by sending a link that enables automatic editing by email. In particular, Quip was developed to meet the specifics of mobility; soon adapts to various devices.

The last example of an online editor found is the CTE (Collective Text Editor). This was developed by the research group NDTAE (Nucleus for Digital Technology Applied to Education) at UFRGS. It is a public domain text editor that provides space for writing collective texts online. In addition to the editing area, it has tools that support communication and interaction between users, as well as resources for organizing texts and files. It has features such as: Notifications, Documents, Library, Forum, Messages, Personal Data, Help and Exit.

CTE is organized from a structure of folders, that is, the first action to use it with a group of students is to create a folder using the “Documents” option. From then on, the other functionalities will be linked to this folder, allowing the teacher and their students to share texts, support materials, exchange messages and carry out debates in the discussion forum. Thus, it is important to highlight that, before any action, it is necessary to select the respective folder where the students are to start interacting.

Among the main resources to support Digital Collective Writing, the insertion of comments in the text,

the visualization of the participation history (text version), sending messages to the group and the RecCTE (CTE recommender) stand out. The latter deals with a Recommendation System that aims to recommend content (texts, images and videos) related to the collective text that is being built.

In order to facilitate the visualization of the resources available in the collective text editors found, Chart 1 was constructed, which presents a comparison between them. The options that were analyzed refer to the aspects of text formatting, specific features, communication tools and licensing of each system.

Chart 1: Comparison between Collective Text Editors

Options	Google Docs	Word On-line	Zoho Docs	EtherPad	TitanPad	Penflip	Quip	ETC
Features for text formatting								
Font style	X	X	X	X				X
Font size	X	X	X	X				X
Font color	X	X	X	X				X
Font Highlight	X	X	X				X	X
Bold	X	X	X	X	X	X	X	X
Italic	X	X	X	X	X	X	X	X
Underlined	X	X	X	X	X		X	X
Strikethrough	X	X	X	X	X		X	
Text indent	X	X	X	X	X			
Superscript	X	X	X	X				
Underscript	X	X	X	X				
Styles	X	X	X	X		X	X	
Line spacing	X	X	X	X				
Text alignment	X	X	X	X				X
Bookmark list	X	X	X	X	X	X	X	X
Numerical list	X	X	X	X		X	X	X
Copy, Paste and Cut	X	X	X				X	
Undo/Redo	X	X	X	X	X		X	X
Clear formatting	X	X	X					

Options	Google Docs	Word On-line	Zoho Docs	EtherPad	TitanPad	Penflip	Quip	ETC
Specific functionalities								
Spreadsheet	X	X	X				X	X
Link	X	X	X			X	X	X
Image	X	X	X			X	X	X
Video			X					
Equation	X		X					
Drawings	X			X				
Shapes	X		X					

Text box			X					
Graphic	X							
Bookmark	X		X					
Symbol		X	X					
Horizontal line	X		X				X	
Enf note		X	X					X
Footnote	X	X	X					
Word count	X	X	X	X		X		X
Page numbering	X	X	X					
Set page	X	X	X					
Ruler	X		X					
Columns	X		X					
Page break	X	X	X	X				
Header	X	X	X					
Footer	X	X	X					
Options	**Google Docs**	**Word On-line**	**Zoho Docs**	**EtherPad**	**TitanPad**	**Penflip**	**Quip**	**ETC**
Print	X	X	X	X	X		X	
Zoom in text	X	X	X					X
Draft								X
Version control	X	X	X	X	X		X	X
Text version number			X	X	X			X
Export	X	X	X	X	X	X	X	X
Import	X	X	X	X	X			
Spell-check	X	X	X	X				
Accessibility		X						
Suggestion mode	X							
View mode	X	X	X	X		X	X	X
Read mode		X						
Folders	X	X	X				X	X
Auto save	X	X	X	X	X		X	
Voice typing	X							
Plugins / Complements / Supplements	X	X		X				
Simultaneous writing	X	X	X	X	X		X	
Explore / Smart Search	X	X						
Markdown Support				X		X	X	

Options	Google Docs	Word On-line	Zoho Docs	EtherPad	TitanPad	Penflip	Quip	ETC
Communication tools								
Comments	X	X	X	X			X	X
sending messages	X		X			X	X	X
Chat	X		X	X	X		X	X
Notifications	X	X	X					
Discussion forum						X		X
Licensing								
Free use	X	X	X	X	X	X	X	X
Owner	X	X	X			X	X	
Open code				X	X			X

5. Final considerations

The article aimed to present the concepts that define Collective Digital Writing, identify its main characteristics and point out some technological possibilities that support this type of textual production. Through this study, it was noted that, in the literature, there are several authors who deal with the subject using related terms. The conceptual variety is wide and complementary to each other and can be understood as the construction of a text developed by two or more authors using digital technology.

In parallel, it was noted that this type of writing has some characteristics of its own, which are important to be considered in order to favor better conditions for its development. Among them are the possibility of different strategies for structure, writing and management of the activity; the time and space that are constituted in a specific way in view of the flexibility that this writing favors; group work that involves a wide range of activities, functions and subtasks; the collaboration, cooperation, communication and interaction that foster relationships between the participants and each has a specific role in this relationship; hypertexts that expand the boundaries of writing; the authorship that needs to be marked from the multiplicity of voices; the respect and flexibility that provide conditions for social relations to be maintained and, finally, the technological resources that provide conditions for all characteristics to be maintained and for the process to be sustained in a dynamic and productive way.

Finally, the work presented and related several technological possibilities in which it is possible to develop collective digital writing and concludes that the choice of this resource depends exclusively on the needs of users in their pedagogical practices

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