

Characteristic Features of Electronic Dictionaries. Proposals for Development and Evaluation of Advantages and Limitations

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ABSTRACT:

The rapid evolution of information and communication technologies has significantly influenced the development and functionality of electronic dictionaries. This article explores the advantages, limitations, and future perspectives of electronic lexicography, comparing it with traditional print dictionaries. Drawing upon the ideas and suggestions of several notable scholars including Shriver, L.Bowker, H.Bergenholtz, and A.A.Zalevskaya the study analyzes both the current state and the prospective trajectory of electronic dictionary design. A central focus of the article is the enhancement of search functions within digital dictionaries. Researchers argue that the development of complex, multi-level search systems capable of recognizing spelling errors, implementing wildcard searches, and offering semantic-based results represents a significant leap from the rigid, alphabetical constraints of print dictionaries. Hyperlinks connecting entries and dictionaries further increase productivity, allowing users to explore language in a more interconnected manner. Despite these benefits, electronic dictionaries are not without drawbacks. Several scholars, including L.Bowker and H.Bergenholtz, emphasize issues such as limited content in offline dictionaries, inconsistent user interfaces, and poor integration of lexicographic theory. A/B testing involving students revealed that, while electronic dictionaries allow for quicker look-ups, they often lack the depth and nuance found in

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comprehensive print resources. Additionally, interface complexity and excessive pop-up windows can distract users and hinder effective use, as noted by Zalevskaya. The article proposes seven key methods to improve future generations of electronic dictionaries. These include: expanding database capacity to accommodate richer linguistic content; customizing dictionaries for different user groups (e.g., translators, learners, professionals); integrating dictionary functions with real-time text analysis tools; offering grammar and orthographic correction features; and designing user-friendly interfaces without compromising functionality. In addition to these methodological proposals, the article provides a detailed classification of the strengths and weaknesses of electronic dictionaries across various dimensions search capabilities, technical features, user interface, and information presentation. It concludes that while current electronic dictionaries exhibit considerable potential, their full capabilities remain underutilized due to technical and design shortcomings. Nevertheless, when properly developed, electronic dictionaries can become indispensable tools for a wide spectrum of users beyond the field of language studies, including engineers, doctors, and travelers. Ultimately, the article advocates for the compilation of a dedicated glossary of terms used in electronic lexicography to standardize terminology and facilitate further research. With appropriate innovation and interdisciplinary collaboration, the next generation of electronic dictionaries may provide enhanced linguistic insight, intuitive usability, and dynamic interaction between users and language data..

Keywords: softcopy, hardcopy, e-dictionary, lexicography, digital information

INTRODUCTION.

The distinctions between electronic and traditional dictionaries, along with their primary characteristic features, have been outlined by various scholars conducting research in this field. Let us consider the perspectives of several of these researchers. According to V.P. Berkov, the electronic dictionary of the XXI century must meet the following requirements:

- It should be comprehensive in terms of volume;
- It should have a concentric structure;
- It should feature hyperlinked entries;
- Dictionaries should include audio components;
- It should provide complete grammatical information about both headwords and derivatives;

- It should more thoroughly present word combinations and collocations;
- It should contain information about the systemic relationships of words;
- It should incorporate graphical illustrations;
- It should include extensive material on proper names;
- A continuously operating “update service” should be maintained [Berkov, 2000].

Indeed, many of these features are present in most electronic dictionaries currently in use; however, some still exhibit certain shortcomings. Electronic dictionaries deliver information based on users’ specific queries. Such dictionaries can function independently or be integrated as components within larger translation systems and electronic databases.

Q.M. Mandrikova and N.A. Sivakova distinguished electronic dictionaries from traditional ones based on the following features:

- *Flexibility* – linguistic software tools facilitate easier access to the dictionary and expand its functional capabilities during use;
- *Compactness* – they allow for the establishment of lexical connections across different languages;
- *Bidirectionality* – users can select any language as the source language when entering the dictionary;
- *Dynamism* – the ability to revise dictionary entries and remove obsolete words

In response to the above, S.A. Stroykov commented: "The first three features are also characteristic of traditional dictionaries. The fourth feature, namely *dynamism*, is actualized solely in electronic dictionaries and constitutes a principal and defining distinction between electronic and traditional formats" [Mandrikova, 1994]. [Stroykov, 2008].

I.I. Zavarueva categorized the strengths and weaknesses of electronic dictionaries as follows:

- A) Advantages** – larger volume compared to printed dictionaries, fast word search, transcription and audio pronunciation, compactness, and flexibility;
- B) Disadvantages** – limited social interaction, the need for updates to certain technical functions, and the presence of psychologically affecting factors [Zavarueva, 2013].

P.Sharp, expressing skepticism toward computer-based dictionaries, remarked: "Simply transferring traditional dictionaries into a digital format is practically the same as using printed dictionaries, and this approach holds little promise" [Sharp, 1995]. N. Forget, on the other hand, reached the following conclusion regarding electronic dictionaries: "Electronic dictionaries differ from printed ones in terms of usability, presentation, search capabilities, technical aspects, structural composition, and the integration of multimedia elements" [Forget, 1999]. In particular, the author

emphasizes the role of *hypertext* in electronic dictionaries. He further adds: "Every electronic dictionary possesses its own internal structure. As a result, users must dedicate considerable time to understanding the internal navigation of these dictionaries. Both in the structure of the dictionaries and in the presentation of lexical items, different colors and interactive multimedia interfaces are often used to highlight information. Electronic dictionaries function through various types of searches, and although manual searching is significantly slower than automatic search, users may still not always achieve sufficiently satisfactory results".

H.Nesi and E.Schrivier, sharing a common viewpoint, point out the limited capabilities of automatic search functions in traditional dictionaries. They argue that, although traditional dictionaries present their entries in alphabetical order, search functionality is restricted by the compiler, and in many cases, even direct and precise word search is not possible. H.Nesi also notes: "*People have become accustomed to navigating maps, encyclopedias, and dictionaries in a typical, linear fashion*" [Nesi, 1999]. He implies that this behavior may eventually shift as users adapt over time to electronic formats. M. Sanchez, in contrast, argues that searching in electronic dictionaries is significantly faster and more efficient due to the integration of modern search technologies [Sanchez, 2009]. The user's ability to translate and make contextual word choices plays a crucial role here. Selecting contextually appropriate words and demonstrating linguistic agility are key skills required of the user. It is important to remember that the electronic dictionary phenomenon is relatively new, and mastering its use requires time. F.E. Knowles advocates for the use of *hyperlinks* in electronic dictionaries [Knowles, 1990], while F.R. Abate supports the inclusion of images and graphics in natural language search processes [Abate, 2011].

Perspectives on Search Functions in Electronic Dictionaries - The views and suggestions of several scholars regarding search types have already been implemented in some electronic dictionaries. For example, in his 2003 article "*Lexicographers' Dreams*," which is among

the contemporary contributions to electronic lexicography, E. Schriver calls upon dictionary compilers to expand the range of complex search functionalities in electronic dictionary design.

Many electronic dictionaries now support search functions even in large-scale volumes, and this functionality is not limited to general-purpose dictionaries but is also present in content-specific ones. Additionally, hyperlinks within electronic dictionaries allow users to navigate to related lexical items. This suggests that creating inter-dictionary hyperlinks can significantly enhance productivity. Even if a user inputs a word incorrectly, the electronic dictionary is often capable of suggesting the correct form. Furthermore, many such dictionaries support wildcard searches (e.g., using symbols such as *, /, !, etc.) and phonetic or pronunciation-based searches. Priority is given to semantically linked and orthographically related search options—features unattainable in traditional printed dictionaries.

L.Bowker identified a common shortcoming in *offline* electronic dictionaries: insufficient content. In a study, she divided students into two groups—one using only traditional dictionaries and the other using electronic ones (both offline and online) for translation tasks. She concluded that although electronic dictionaries yield faster results, many of them suffer from content deficiencies [Bowker, 1998].

H.Bergenholtz remarked: “If electronic dictionaries are potentially capable of fast searching, whether they achieve this in practice depends on their design. In general, digital media serves as a tool that frees us from various inconveniences” [Bergenholtz, 1997]. He also emphasized the need for broader use of such dictionaries. While using an anonymous electronic dictionary, he observed: “There is an incredible lack of lexicographic depth and interest here”. Bergenholtz praised *The Oxford Guide to Practical Lexicography* by S. Atkins and M. Rundell, stating: “This is not just an ordinary book; it is a work of lexicographic theory” [Rundell, 2014]. This book references the work of several well-known lexicographers and

introduces a number of specialized terms frequently used in electronic lexicography. Examples include:

- **Copycats** – (conversion of hardcopy to softcopy): the process of digitizing printed dictionaries and uploading them online;
- **Faster horses** – (faster searching): improved search speed in digital environments;
- **Model T Fords** – (first attempts at using what digital media offer): initial efforts to leverage the potential of digital media;
- **Rolls Royces** – (useful distinction between interactive, active, and passive methods for individualization depending on whether the user or the system takes the lead): an effective classification of approaches based on the level of user/system interactivity and control.

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The Future of Electronic Lexicography: Proposals for Development and Evaluation of Advantages and Limitations - From the analysis above, it becomes evident that creating a dictionary of specialized terminology used in the

field of electronic lexicography would significantly facilitate the work of researchers and developers alike. Based on the theoretical perspectives collected, five key strategies can be proposed for improving the next generation of electronic dictionaries:

1. **Expanded Database Capacity**

Future-generation electronic dictionaries will significantly differ from traditional ones in terms of their internal databases. These will include a maximum number of entries and outputs, greater lexical polysemy, and a rich array of examples and idiomatic expressions. Currently, modern electronic dictionaries are limited to approximately 200 MB in size; however, it is expected that the new generation will possess a memory capacity of up to 650 MB or more.

2. **Increased Flexibility and User Profiling**

The new generation of dictionaries will offer greater linguistic flexibility and personalization based on user categories—such as general users, translators, experts, and language enthusiasts. This differentiation will enable customized interaction and functionality tailored to individual needs.

3. **Enhanced Search Interaction and Semantic Comparison**

Developers can increase the level of user engagement by integrating more intuitive search features. For example, touching or clicking a word could yield the most contextually relevant meaning. At the same time, alternative meanings of the word can be displayed on the screen to enable semantic comparison—thus enhancing user understanding and lexical learning.

4. **Integration with Text Analysis Tools**

The integration of electronic dictionaries with text analysis software is also a feasible advancement. This would eliminate the need to consult external dictionaries, allowing direct translation or analysis within the text interface. Moreover, not only orthographic but also grammatical spell-checking tools could be incorporated to aid linguistic precision.

5. User Interface Optimization

Developers can streamline dictionary interfaces for better user experience. However, such modifications should not require fundamental changes in usage behavior; rather, they should enhance usability without compromising existing interaction methods.

The advantages of electronic dictionaries can be classified as follows:

- Large lexical capacity and storage volume;
- High-speed and user-friendly search functions;
- Availability of visual and auditory illustrations of searched items;
- Potential for continuous updating and content expansion;
- Possibility to explore alternative meanings and usages of lexical entries;
- Interactivity, including user comments on entries and the ability to contribute as authors;
- Hypertextual references and external links to source materials and original texts.

Key Findings on Strengths and Weaknesses

1. Functional Advantages during Use

The memory and hypertext functions of electronic dictionaries allow for rapid and easy access. Users can retrieve various types of information and guidance at high speed. Electronic dictionaries allow diverse search options and provide real-time interactivity that enhances the effectiveness of dictionary-based advice.

2. Functional Limitations during Use

Due to the considerable variation in interface design, each electronic dictionary requires a specific learning curve. Users must dedicate time to understanding the navigation and features of individual dictionaries.

3. Presentation Advantages

Multimedia elements help clarify otherwise difficult-to-understand definitions and explanations. These include color-coded visuals,

sound files, and short video clips that attract user attention and improve comprehension.

4. Presentation Limitations

One drawback is the interface clutter caused by multiple overlapping windows, which restricts full-view access to dictionary entries. Often, users can only view fragmented information, which necessitates frequent switching between windows. This can distract users from their original objective. A.A. Zalevskaya criticized this aspect of electronic dictionaries, noting: *"The overlapping of multiple windows renders the dictionary practically unusable. The psychological impact on users is substantial."* [Zalevskaya, 1999].

5. Advantages of Search Capabilities

One of the most prominent strengths of electronic dictionaries lies in the variety and efficiency of their search functions. Unlike printed dictionaries, electronic versions allow users to search for lexical items with remarkable speed and precision. The flexibility of search parameters—such as wildcard symbols, phonetic input, and partial queries—significantly enhances user experience and retrieval effectiveness.

6. Limitations of Search Capabilities

However, users with limited digital literacy may find it difficult to navigate these features efficiently, potentially resulting in wasted time and inaccurate results. The success of the search process is often contingent on the user's familiarity with digital environments and search strategies, which not all users possess.

7. Technical Functional Advantages

Technical functionality plays a crucial role in the operation of electronic dictionaries. Search requests that arise during usage are essential in shaping the ongoing development of technical features. Hyperlinking—available in most modern dictionaries—enables smooth transitions between related entries or even external dictionary databases. Unlike traditional print dictionaries, electronic versions occupy no physical space, are lightweight, do not degrade over time, and can be accessed through various portable devices. Additionally, while alphabetic arrangement is the main navigational tool in print

dictionaries, electronic dictionaries offer far more advanced and dynamic navigation options.

8. Technical Limitations

In some cases, the response to a query may be limited to the specific dictionary in use, with no support for hyperlinking or external references. Furthermore, some dictionaries lack robust technical capabilities or require additional hardware (e.g., storage devices or compatible software platforms). Users often encounter technical issues, such as excessive overlapping of windows or instability in navigation, which can obstruct efficient usage. Additionally, the cost of electronic dictionaries may exceed that of their printed counterparts. A considerable number of users feel that print dictionaries better meet their needs due to the limited search functions or user interface complexities of certain digital versions. Some developers have not yet fully leveraged the technological potential of electronic dictionaries, leaving functionality underdeveloped.

Final Remarks

Therefore, electronic dictionaries should be designed in such a way that they serve not only language learners but also a wide range of users—including tourists, engineers, and medical professionals. The ideal electronic dictionary should provide automatic spelling correction, audio pronunciation, voice-enabled and fast search options, and various advanced interactive features. It is anticipated that such advanced dictionaries will become available in the near future. Despite existing technical shortcomings, electronic dictionaries continue to offer significant advantages to users, and some already partially fulfill the practical needs of translators.

Outcomes - This study has led to the following key findings regarding the current state and future development of electronic dictionaries:

1. **Advantages of Electronic Dictionaries:** Compared to traditional paper-based dictionaries, electronic dictionaries offer faster search functions, a broader and more interactive database, and multimodal content delivery through audio, graphic, and video illustrations. Hyperlinks, real-time updates, and

user-oriented customization significantly improve accessibility and usability, especially for translators, language learners, and linguistic researchers.

2. **Flexibility of Search Functions:** Advanced search mechanisms such as wildcard queries, orthographic correction, phonetic search, and semantically linked entries provide greater flexibility and precision in information retrieval. These features allow users to explore word meanings, usage examples, and related expressions efficiently, even if there are spelling errors or incomplete input.

3. **User Differentiation and Personalization:** Next-generation electronic dictionaries are expected to serve diverse user groups—including language learners, professional translators, experts in various fields, and casual users—by offering adaptive content, simplified interfaces, and context-specific suggestions. This differentiation enhances the user experience and supports individualized learning or reference needs.

4. **Integration with Text Analysis Tools:** Future dictionaries will likely be integrated with text editors and translation platforms, enabling real-time word analysis, grammatical correction, and automatic suggestion features without requiring users to switch platforms. This will contribute to more seamless and efficient workflows in academic and professional environments.

5. **Terminological Development:** The emergence of specialized terminology within electronic lexicography (e.g., “copycats,” “faster horses,” “Rolls Royces”) signals the need for a dedicated glossary of electronic dictionary-related terms. This would support researchers and developers in navigating and advancing the field more effectively.

6. **Technical Functionality and Limitations:** Although electronic dictionaries offer portability, large data capacity, and multimedia features, there remain notable technical challenges. These include interface complexity, overload of pop-up windows, lack of

cross-linking in some versions, high cost, and user difficulties stemming from insufficient digital literacy. These factors can hinder user efficiency and satisfaction.

In the context of the education process, this article can be highly valuable on several levels — both theoretically and practically. This study offers conceptual and analytical insights that help learners and educators understand:

- What electronic dictionaries are.
- How they have evolved compared to traditional paper dictionaries.
- The strengths, weaknesses, and structures of different types of electronic lexicographic resources.
- Key terminology and theoretical approaches to electronic lexicography.

It helps learners and educators use, evaluate, and even design better digital resources for language learning, research, and communication. It improves digital literacy and applied skills — which are highly relevant in today's education systems.

1. Content Analysis

- Analyzing the structure, definitions, and classifications of electronic dictionaries discussed in the article. Helps identify trends or patterns.

2. Survey Research

- Gathering quantitative data from students, educators, or translators about their use and perception of electronic dictionaries in education.

3. Interviews/Focus Groups

- Conducting qualitative research through interviews or group discussions to explore user experiences with electronic dictionaries.

4. Case Study - In-depth exploration of the application of electronic dictionaries in a specific educational setting (classroom, online course, etc.).

5. Experimental Research - Conducting controlled experiments to measure the impact of

electronic dictionaries on students' learning outcomes, such as vocabulary acquisition.

6. Usability Testing - Evaluating the effectiveness and ease of use of electronic dictionaries through user testing to improve the design and functionality.

7. Corpus-based Analysis - Analyzing language data from the dictionaries' corpora to assess their linguistic quality, coverage, and accuracy.

These methodologies offer different lenses through which you can investigate the role and impact of electronic dictionaries in education.

Conclusion - In conclusion, electronic dictionaries have undeniably revolutionized the way people access and process language data. Their advantages over traditional print dictionaries are numerous, and their continued evolution signals a bright future for the field of lexicography. These electronic tools have transformed from simple word collections into dynamic, interactive resources, offering not only definitions but also multimedia elements such as audio pronunciations, video demonstrations, and graphic representations. The integration of hyperlinks and semantic relationships between entries further enhances the depth and usability of the information provided.

One of the most significant advantages of electronic dictionaries is the speed and flexibility of search functions. Unlike traditional paper dictionaries, where users must manually scan through pages to find a word, electronic dictionaries enable rapid retrieval of information through advanced search mechanisms. Features such as wildcard searches, spelling correction, phonetic search, and contextualized results provide users with a more comprehensive and accurate understanding of words and their meanings. The ability to search for related expressions or synonyms directly also improves the user's ability to understand subtle variations in word usage, which is crucial for language learners, translators, and researchers.

Moreover, the future of electronic dictionaries will involve increasingly sophisticated systems capable of personalizing content for specific user

needs. By recognizing user preferences, expertise, and previous search patterns, these systems can offer tailored suggestions, improving the overall learning experience. This adaptability is especially beneficial for diverse groups of users, ranging from professional translators to casual learners, as well as specialists in various fields such as medicine, law, or engineering, who require specialized lexicons and terminology. Therefore, the future development of electronic dictionaries will likely focus on creating customizable user interfaces and interfaces that cater to the specific demands of these different groups.

Another exciting prospect for the future of electronic dictionaries is their integration with other digital tools, such as translation software, text editors, and educational platforms. By merging dictionary features with other language-related technologies, users will have access to seamless workflows. For example, a translator working within a text editor might receive real-time suggestions from an integrated electronic dictionary, eliminating the need to switch between multiple programs or applications. This interconnectedness not only enhances user efficiency but also fosters a more cohesive and productive digital ecosystem for language professionals.

Despite their many benefits, electronic dictionaries still face certain challenges and limitations. One major issue is the technical complexity of these tools. While they offer numerous functionalities, the user interfaces can sometimes be overwhelming or unintuitive, especially for users unfamiliar with digital platforms. Overloading the user with pop-up windows, excessive options, or fragmented layouts can disrupt the overall experience and deter users from fully utilizing the tool. Additionally, while many electronic dictionaries now boast vast amounts of content, not all of them are fully comprehensive or up-to-date. Many still lack certain lexical entries or relevant

contextual information, limiting their usefulness for advanced or specialized users.

Furthermore, some users may encounter technical limitations related to device compatibility, software crashes, or insufficient processing power. In some cases, the cost of electronic dictionaries can also be a barrier, especially for students or professionals in lower-income regions. As these dictionaries often require advanced technical infrastructures, they are not always as accessible or affordable as traditional print versions.

Nevertheless, despite these challenges, the potential of electronic dictionaries is vast. Moving forward, the development of these tools will likely focus on addressing the technical limitations while enhancing their strengths. This could include improving the user interface for easier navigation, adding more specialized and niche vocabulary for professional use, and integrating dictionaries more deeply into educational and translation ecosystems. The creation of a unified lexicographic terminology glossary could further streamline the development process, providing a shared understanding of key concepts and innovations in the field.

In summary, the future of electronic dictionaries holds tremendous promise, with advancements that will continue to expand their capabilities and improve their effectiveness as language tools. By addressing existing limitations, especially in terms of usability, accessibility, and content richness, electronic dictionaries will become even more integral to our digital lives. With continued technological and conceptual developments, these dictionaries will not only serve as essential reference tools but also become more interactive, user-driven, and indispensable components of modern communication, learning, and professional practice.

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