TYPES AND CLASSIFICATION OF DIGITAL TOOLS ТИПЫ И КЛАССИФИКАЦИЯ ЦИФРОВЫХ ИНСТРУМЕНТОВ

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Abstract

Digital tools are fundamental to academic work, communication, and professional productivity. However, the terminology and classification of these tools vary depending on the context and usage. This article aims to synthesize current academic perspectives to provide a clear and updated classification of digital tools. Drawing on literature from educational technology, computer science, and information management, the study identifies key types and properties of digital tools, exploring their implications for research and practice.

Key words: digital tools, classification, educational technology, productivity software, online services

Аннотация

Цифровые инструменты стали основой для академической работы, коммуникации и профессиональной продуктивности. Однако терминология и классификация этих инструментов различаются в зависимости от контекста и использования. Эта статья направлена на синтез текущих научных взглядов для предоставления четкой и обновленной классификации цифровых инструментов. Опираясь на литературу по образовательным технологиям, информатике и информационному менеджменту, в исследовании выявляются ключевые типы и свойства цифровых инструментов, исследуются их последствия для исследований и практики. Ключевые слова: цифровые инструменты, классификация, образовательная технология, программное обеспечение производительности, онлайн-сервисы

Introduction

The increasing integration of digital technologies in professional and academic fields has made digital tools an essential part of everyday work. However, the definition of what constitutes a digital tool and how to classify it is still evolving. Understanding the classifications can improve users' ability to select appropriate technologies for specific tasks, whether in education, research, business, or personal development. Recent studies have examined these tools in different ways, proposing functional, educational, and technical classifications (Schcolnik, 2018; Hillmayr et al., 2020). This paper reviews these approaches and offers a consolidated perspective.

Methods

To develop a robust understanding of the topic, this article reviews peerreviewed journal articles published between 2018 and 2024. Academic databases such as ScienceDirect, Springer, and ResearchGate were searched using keywords like "digital tool classification", "types of digital technologies", and "educational technology tools". Selected papers were analyzed qualitatively, focusing on how they define and categorize digital tools in different domains. The review includes literature from computer science, education, and information systems.

Results

Recent studies show that digital tools can be understood and grouped differently, depending on their purpose, where they are used, and how they work. One common approach is to look at their function. Some tools mainly help users find or share information, such as e-learning platforms or online libraries. Others help people complete tasks more easily, such as writing software, planners, or scheduling apps. Many tools today serve to make communication easier, like Zoom or WhatsApp, especially for teamwork. Schcolnik (2018) suggests a useful way to organize digital tools by dividing them into four main categories: language tools, research tools, organizational tools, and collaboration tools. Language tools support writing and editing, including grammar checkers, dictionaries, and translation apps. Research tools are useful for collecting academic sources and managing references, such as databases or citation managers. Tools for organization, like calendars or mind maps, help users plan their time and structure their ideas. Collaboration tools are those that let several people work on a document or project together, often in real time, for example, shared documents or group work platforms. These categories help us understand how digital tools are designed not only to do technical tasks, but also to support thinking, learning, and working together in both education and professional life.

In the educational context, Hillmayr et al. (2020) conducted a meta-analysis demonstrating how digital tools like simulations, tutorials, and interactive modules improve science and mathematics education when used in a structured environment. They argue that tools aligned with curricular goals lead to better learning outcomes than those used independently. Similarly, Alordiah et al. (2023) explored the awareness and actual use of digital research tools among university staff and found that while awareness was generally high, actual usage was often limited by lack of training or access.

On a broader technological level, Genz, Janser, and Lehmer (2019) propose a typology based on how digital technologies are embedded in work environments. They distinguish between operational tools (for example, customer service software), analytical tools (for example, data dashboards), and automation tools (for example, robotic process automation). These categories overlap with, but are not identical to, those used in academic or pedagogical settings. The focus here is on the labor market and the evolving relationship between technology and human skill. An important but sometimes overlooked aspect is the characteristics of the tools themselves. These include their mode of delivery (web-based or installed), the scale of use (individual or institutional), and trialability, meaning how easy it is to experiment with the tool before fully adopting it. These features influence whether a tool is widely accepted. Emerald Publishing (2023) emphasizes that researchers often adopt tools that are free to try and compatible with existing systems, such as citation managers or online writing assistants.

Discussion

The reviewed literature reveals that there is no single system for classifying digital tools; instead, the framework often depends on context. Educational researchers focus on how tools impact pedagogy, computer scientists on how tools operate, and social scientists on how people interact with them. Despite these differences, several themes emerge. First, most tools serve either a content-based, task-based, or communication-based purpose. Second, their effectiveness depends not only on their design but also on the user's familiarity and the institutional support provided (Alordiah et al., 2023; Hillmayr et al., 2020).

Third, tool adoption also reflects socioeconomic and geographic disparities. Genz et al. (2019) found that access to newer digital technologies correlates with higher wages in Germany, pointing to broader implications for digital inequality. Finally, integration remains a challenge. Even with excellent tools, educators and researchers may struggle to incorporate them into their workflow due to lack of training, complexity, or resistance to change.

Conclusion

The classification of digital tools is a complex but necessary endeavor in a world where digital technologies are deeply embedded in daily academic, professional, and personal activities. This article has reviewed multiple frameworks to highlight how digital tools can be grouped according to their function, domain of use, and inherent characteristics. While distinctions exist across fields such as education, labor, and research, common themes such as usability, accessibility, and contextual integration remain central.

The analysis shows that successful use of digital tools depends not only on their technical capabilities but also on user competence, institutional support, and broader socio-technical environments. As technologies evolve, new classifications will emerge, and researchers and practitioners must remain adaptive. Future work should focus on dynamic frameworks that accommodate technological change and promote inclusive access, especially in underrepresented regions and sectors.

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