

# Potential Advantages and Disadvantages of Digital Textbooks

## **Potential Advantages and Disadvantages of Digital Textbooks**

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Purchasing textbooks is a major expense that students face when going to college. A recent study by the College Board<sup>2</sup> reported students paid on average \$1240 for textbooks and educational supplies during the 2018-2019 academic year. This amount has increased roughly 38% since last reported in 2016. With educational costs rising students are looking for alternative ways to purchase needed course materials. In recent years students have slowly transitioned away from purchasing printed textbooks to renting required course materials as a cost saving strategy. This change in the textbook market has resulted in publishers suffering a loss in revenue which results in decreased royalties for authors. Textbook publishers have

begun to revisit their approaches to providing educational materials as a means for gaining a foothold in this evolving market. Continuous advancements in technology have provided the opportunity for publishers to offer digital textbooks as a potential cost saving option for students to consider. The change and rebranding of the market presents the question, “What is the future of printed textbooks?” Recently, a large publisher announced they were moving forward with redirecting their focus away from producing printed textbooks to offering all content via digital access<sup>9</sup>. While the option of a digital textbook may sound promising to students, questions have been raised regarding the advantages and disadvantages of using this format to present educational material. This article examines the potential advantages and disadvantages of digital textbooks for authors and educators to consider.

## ADVANTAGES



Potential advantages of digital textbooks have been associated with the capabilities of this format of educational materials. Areas most discussed by experts include interactive and collaborative resources, familiar navigation tools, and real-time

updates.

### ***Interactive and Collaborative Resources***

A digital textbook is an electronic form of a printed textbook that requires the use of an electronic device (e.g., PC, laptop, tablet) to access and view the content. A digital textbook allows for convenience in reading since it is downloadable, making the content available offline, and viewable across multiple electronic devices. Digital textbooks also contain interactive resources that are not found in

printed educational materials. Common examples include, live weblinks to media content such as videos, interactive case studies, highlighting and annotating tools, and audio translations. In addition, some digital textbooks have collaborative capabilities in which students and educators can share highlights, annotations, and pose questions to each other. The ability to integrate interactive and collaborative resources has provided authors an opportunity to re-envision how to present content in a less stagnant and innovative way. Authors now have the capability to meet the learning styles of students who best comprehend content that is presented visually and verbally.

While limited, research suggests the interactive and collaborative features of digital textbooks may increase student engagement in learning<sup>1</sup>. The additional resources and collaborative learning capabilities offered by digital textbooks provide opportunities for educators to incorporate just-in-time learning experiences in their classrooms. With portability being a benefit, students may be more likely to bring digital textbooks to class since they are considerably more mobile than the traditional printed counterpart. In turn, educators can incorporate the use of a digital textbook for in-class activities to enhance the learning experience and increase students' perceptions of the usefulness of the digital content. deNoyelles and Raible<sup>4</sup> suggest students' views regarding the usability of a digital textbook is an influential factor linked to students' engaging in the content.

### ***Familiar Navigation Tools***

Students also locate and search for information differently in a digital textbook. Commonly used items like a table of contents, index, and page numbers are not included in a digital textbook. Students find information by using hyperlinks associated with chapters or use the electronic device's search function to find key words or phrases linked to the content they are looking for. The navigation tools

provide authors with the ability to streamline information presented through easily linking associated content throughout the digital textbook. In addition, digital textbooks allow for quick bookmarking of a page with a click of an icon. Students can then review all their bookmarked pages or go to a specific page by using the navigation tools. When the student is connected to the Internet bookmarks are automatically synced across electronic devices making it easier for them to return to previously viewed content when preparing for class, reviewing notes, or studying for exams. Having access to digital content makes it convenient for students to take notes by copying and pasting information. The required skills to use the functions of searching, bookmarking, and copying and pasting information mimics tasks students complete when using social media platforms. Therefore, students may be more likely to use these functions due to comfort and familiarity. While convenience is important for increasing perceptions of usefulness and likelihood for the student to keep using features of digital textbooks, more research is needed regarding how these capabilities enhance learning<sup>12</sup>.

### ***Real-Time Updates***

Relevance of information is another key factor in students' perceptions of the usefulness of a digital textbook. Historically textbook publishers have followed the model of updating printed textbooks approximately every three years. This practice presents somewhat of a barrier for authors and educators. Following this model authors need to keep current in the topic and be prepared to synthesize recent developments when updating previous editions of the printed text. On the other hand, educators face the barrier of remaining current in teaching evidence-based practice standards due to the lag in time from when industry standards change and printed textbooks are updated. Textbook publishers are reporting that digital textbooks have the potential to be updated in real-time which may result

in a more versatile learning resource that changes based on the availability of new information and the needs of both the educator and student<sup>13</sup>.

## **DISADVANTAGES**

The use of digital textbooks has also been linked to potential disadvantages. Areas of most concern reported by experts include limited new content, mismatch with preferences, decreased comprehension, and rising costs.

### ***Limited New Content***

The refocusing of publishers to offer digital versus printed textbooks has resulted in a decreased need for new authors. Publishers are redirecting their investments to transition successful textbooks from established authors to a digital format<sup>6</sup>. This change in focus has resulted in a decline of agreements between publishers and new authors to create new content. Many educators are responding to the challenge of limited new textbook options by self-publishing and creating their own open educational resources (OER). While creating and using OERs is viewed as one solution, questions regarding their quality has begun to surface as availability and range of topics dramatically increase<sup>7</sup>.

### ***Mismatch with Preferences***

While the current generation of college students have been described as comfortable or savvy with technology, research findings of Abaci et al.<sup>1</sup> suggest they still have a strong preference for paper textbooks. This finding is surprising since this generation is the first to have grown-up with technology. Singer and Alexander<sup>10</sup> offer the explanation that while current students are accustomed to browsing and multitasking in the digital environment: greater physical and mental demands are required when reading on a screen. Additional reasons linked

to preferences for printed textbooks include annoyance of scrolling through digital content, distracting social media alerts on the electronic device, and difficulty moving back and forth through digital pages<sup>1,12</sup>. The preferences of this generation may present as a challenge to authors and educators in situations where a digital textbook will be the only option for providing reading content.

### ***Decreased Comprehension***

A student's level of comprehension appears to be negatively impacted in certain situations when content is presented in a digital format. Singer and Alexander<sup>10</sup> concluded when viewing information that is longer than one-page (500 words) students can better comprehend a printed versus digital format due to the disruptive effect of scrolling. Singer and Alexander also found that students were better able to list key points and recall details when information was presented in print. However, no differences were noted between digital and print when students were asked to only describe the main ideas of the content. Similarly, Delgado, Varga, Ackerman, and Salmeron<sup>3</sup> suggest students who read printed textbooks perform better when answering questions that require inferential reasoning. Perhaps most alarming is that students are unaware of their performance shortfalls when using digital textbooks. Singer and Alexander<sup>10</sup> asked students to identify which version of educational materials (digital or print) they comprehended best after reading an article. Overwhelming 69% reported they felt they better comprehended digital material. This mismatch in students' perceived performance with actual performance has been referred to as *poor calibration*<sup>10</sup>. The prevalence of digital textbooks requires authors and educators to consider how best to support student comprehension when using this medium. This may require changes to be made in writing, editing, and teaching practices to recalibrate students' approaches to reading content presented in a digital versus printed format.

## ***Rising Costs***

A digital textbook can be up to 60% cheaper than the printed option<sup>8</sup>. In addition, students can choose to rent a digital textbook for a semester versus purchasing a lifetime access. This makes digital textbooks an attractive option for students to consider over printed textbooks. However, recent trends suggest educators are bundling course content developed by publishers with digital textbooks that result in an additional cost to students<sup>5</sup>. The purchasing of an access code is now being required before students can retrieve both course content (e.g., homework, quizzes) and the digital textbook from a learning platform maintained by the publisher. Access codes can add on average an additional \$100.00<sup>5</sup>. Students may decide not to take the course or take fewer courses based on the added expense in turn delaying their academic progression.



## **CONCLUSION**

Advancements in technological capabilities will continue to serve as a driving force of changes occurring in the way authors create content and educators facilitate learning. Decisions of publishers to transition to a digital production approach is one example of how technology is creating a new era of how textbooks are developed, purchased, and read. The ubiquity of digital textbooks requires authors and educators to be aware of potential advantages and disadvantages in order to best support the development, delivery and effectiveness of digital educational materials.

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