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# **AC 2011-2345: IMPLICATIONS OF PUBLISHING EBOOKS ON PCS AND MOBILE DEVICES FOR ENGINEERING TECHNOLOGY EDUCATORS**

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# **Implications of publishing eBooks on PCs and Mobile devices for Engineering Technology Educators**

## **Abstract**

There is no doubt that interactive eBooks enable Engineering & Technology educators to present materials and concepts to learners in a rich and compelling manner that can enhance education. It is also evident, the technology to create and deploy eBooks has reached a tipping point. However, there are few guiding principles for how the eBook publishing process can exist within the requirements for tenure track faculty to undertake the Promotion & Tenure process with its rigorous peer review component. There is also a lack of compelling evidence for how to best structure interactive educational activities to maximize learning across a variety of different devices (PC, Tablets, mobile phones).

This paper presents the best practices developed by a collaboration of faculty and an eBook publisher to best maximize learning and address the unique requirements of tenure-track faculty publishing eBooks. The author also discusses the instructional design process used to best adapt instructional content to the eBook format across a variety of devices.

## **State of Publishing Industry**

The textbook industry is amidst a transition in which authors, publishers, and students are not only trying to figure out how to capitalize on eBooks, but also renegotiating their relationships. Students are ultimately looking for learning materials at a reasonable cost that enhance learning. They also want materials that can be accessed from a variety of different devices in a convenient and immediate manner.

There are two predominant approaches to eBook publishing that have been adopted by publishers. Large publishers have centered their approach on the idea of bringing their vast library of existing content directly to their students via direct-to-consumer internet distribution. CourseSmart, a collaboration of Pearson Education, Cengage Learning, McGraw Hill Education, and John Wiley & Sons, aggregates textbooks from all of these publishers into a centralized on-line store from which students can purchase or rent eBooks.<sup>1</sup>

For the most part, these publishers have held on their traditional publishing roots and their value-proposition is to offer students their content in this more convenient format. Specifically, these publishers use the same author royalty structure for their eBook offering as for their traditional books. Typically authors earn from 10% to 15% royalties from both their traditional sale and the eBook sales.<sup>2</sup> The actual content of the books is also the same for their eBooks as for their traditional books. In sense, they have taken their traditional textbooks and any multimedia supplements that ship with their traditional books and dumped them into an eBook format. Across the boards, these publishers have also created custom eBook readers to allow students to create annotations in their text.

In contrast to the large publishers, some academic authors have taken to self-publishing their materials because the cost-of-entry and expertise required to enter the ePublishing industry are fairly low. Anyone with skills in computer graphics and ecommerce could set-up an eBook that compares with the eBooks offered by the large publishers prima facie. Some of these publishers

also seem to have taken designing their content in a variety of different ways to try to maximize learning. Across the board there seems to be more experimentation in trying to create materials and some interesting innovations. However, the quality varies greatly.

The promotion & tenure process mandates academics to have publications that have undergone a rigorous peer review process. The self-publishing approach seems to result in a wide variety of quality and ultimately is not adequate for getting the author's work through the promotion & tenure process. At the author's institution, self-published materials rank extremely low on the pecking order of the items that count as a publication.<sup>3</sup> This is not a problem for the large publishers, whose established publishing process results in peer reviewed textbooks.

### **An Academic - Industrial Collaboration**

Starting in 2004, a collaborative effort between the author and an eTextbook publisher, tried to create a publishing scenario centered on the idea of creating the most instructionally effective content while addressing many of the needs of the main players in this arena --- the students and the authors.

Toward the goals of creating the most effective instructional contents, the group decided to institute a publishing process similar to that found at industrial training facilities. In this paradigm, the authors are treated as Subject Matter Experts (SME) who are augmented by a team of Instructional Designers and media creators. In academia, most Professors have a graduate degree in their area of expertise, but not formal training in Instructional Design or educational research. This set-up allows the authors to concentrate on their subject matter, while receiving feedback from someone who is versed on the latest research findings in the design of instruction. The media creation team allows the instructor to once again concentrate on their writing and the media creation team on creating media for the instructor.

To address the strict review requirements of the promotion & tenure process, the group decided to create an automated publishing process in which technical reviewers are part of the process. In other words, the team built a web-application that takes an author's manuscript and manages the process of interfacing the author with appropriate academic peer reviewers. At the end of the process, the publisher ends up with an eBook that has undergone a rigorous review process that is appropriate for the promotion & tenure process. The review process is valid as it fulfills the function of the traditional review process, review by SME (Subject Matter Expert) while allowing for the convenience of the online publishing arena. The back-end platform will be demonstrated at the conference.

With a heavy investment on the publishing platform, the team felt it was important to pass the result of those business efficiencies to the authors. Thus, they elected two business policies that are central to the collaboration's mission<sup>4</sup>:

1. The authors keep the copyright to the work
2. The authors receive a 70% of the gross revenue generated by the book

The decision to allow author's to keep the copyright to their own book was grounded in the belief that authors would be more motivated to make continual improvements to their work if

they retained the copyright to their book. It was also believed that by keeping the copyright in the hands of the authors, the company would be continually motivated to keep the interest of its authors on its list of priority items.

The seventy percent gross revenue policy is a result of the efficiencies instituted by the company. By automating many of the aspects of publishing activity and relying on the custom tool to also automate the process of collaborating among the players in the publishing of a book, it is very possible to base the author's royalties on 70% of the gross revenue of the book and use the remaining 30% for the company expenses.

In addition to addressing the author's needs, the team decided to place importance on the student's experience with the eBooks. In surveys conducted by the group, they found:

- Students are accustomed to paying for digital goods
- Students want to access their eBooks on a variety of different devices
- Students like the convenience of not carrying around physical books
- Making digital annotations was requested by some of the people
- Students want books that are current

To this end, the group decided to create a set of tools to allow them to create annotatable eBooks that are accessible from a multitude of different devices including desktops & laptops, mobile phones, and tables such as the iPad. To accomplish this task, the group experimented with a variety of different methods that resulted in multi-platform offering of their eBooks. Interestingly the best method for each book varied depending on the content. For example, books with a potential for lots of animations and multimedia work best as native apps on the iPad. Books with little animations could be deployed across multiple platforms using the ePub or secure PDF format.

### **Implications and Recommendations**

At the end of the day, the author can offer this set of recommendations to anyone interested in entering the eBook publishing arena. Bear in mind that these recommendations are based on an ePublishing experience in which the author has a vested interest. Thus, take them with a grain of salt.

#### **1. Start with a clear idea of instructional objectives**

In addition to writing the TOC for your instructional content, also communicate to the rest of your team the instructional objectives for the chapters in your eBook. This will help your team to create any ancillary materials.

#### **2. Apply one of the well known educational models for creating instructional content.**

An instructional design model such as the Dick & Carrey model provides a great framework that has been research validated for creating solid instructional content<sup>5</sup>. When this is applied to an eBook by a knowledgeable SME, it can result in a very effective content.

#### **3. Treat the author as a SME and surround him with an instructional designer and media team**

If you reduce the distracters that can get in your author's way and at the same time help him with a team of experts, you will create a better product.

4. Use the electronic mechanism of the eBook to collect data and iterate quickly.

The electronic nature of eBooks makes it very easy to collect data about the book's usage which can be used to make improvements about the book. If you include some formative and summative evaluation questions in the text, you can also collect data about the effectiveness of the instruction. Use that information to make improvements often. The end result will be a better experience for the students.

5. Take advantage of the native capabilities of the devices

Each device that make it optimal for some tasks. Design your instructional experience to take advantage of those capabilities. Or at least, don't design against those capabilities. For example, it would be a very bad idea to create content for a low resolution mobile device (ie a sony-ericsson K750) that requires the learner discern lots of visual details.

6. Don't skip on the review process

Finally, the review process is critical to successful marketing. Without a proper peer review, the marketability of you eBook will be very limited. In addition, your ability to use the book for promotion & tenure will be almost non existent.

### Conclusion

In conclusion, eBook publishing is very powerful mechanism that can be used to educate students in new ways. However, we should strive to utilizing this method of publishing in manner that is consistent with our needs for rigorous peer-review for the promotion & tenure process and executed in manner that takes results in great instructional content.

### Bibliography

1. *Coursesmart*. (2010, August 31). Retrieved from <http://en.wikipedia.org/wiki/CourseSmart>
2. Cengage. (2011, January 19). *Mobile 3D Game Development: From Start to Market Contract*.