

The University of Nottingham's 6C model of Open Educational Resource Publication (OER)

The 6C model (Figure 1) was first used at Nottingham in 2009 as part of the Jisc funded [BERLIN project](#). The project manager for that project was Andy Beggan, and it was Andy who defined the 6C model to formalise the process that Nottingham used to create and publish Open Educational Resources (OER). The model remains in use at Nottingham as part of the OER publication model, and was adapted for use as part of the Jisc Collections funded [ROMe project](#) to publish Nottingham's e-textbooks. The model would be easily adaptable to other institutions and other online content creation contexts, and has served Nottingham well over the years.

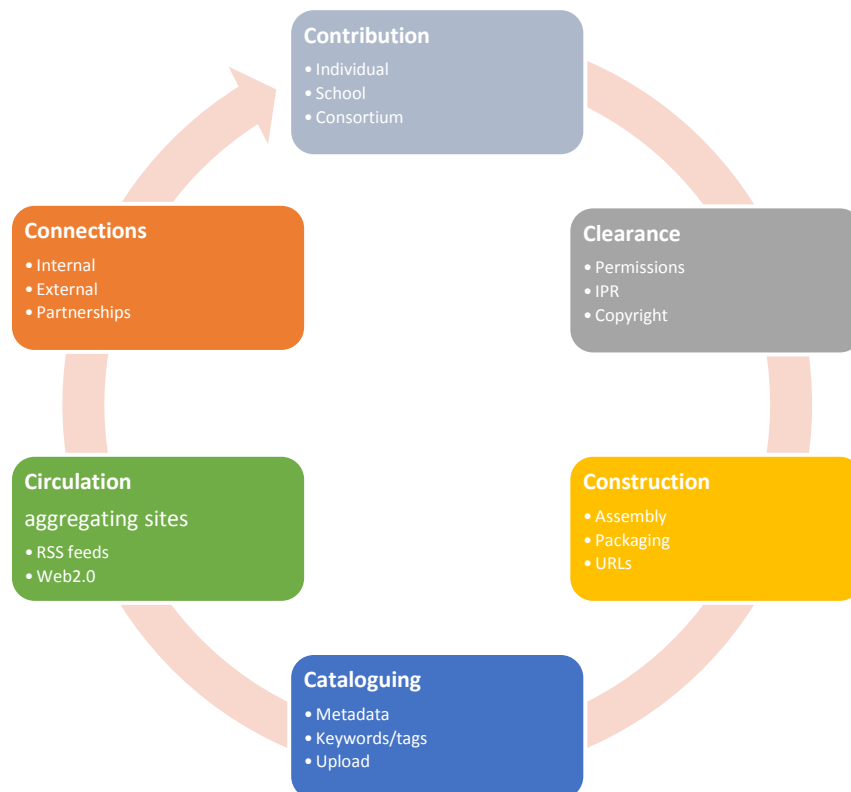


Figure 1 - The 6C model and how it was used to facilitate the creation and publication of the e-textbooks

Contribution

This phase of the model involves setting up processes to receive content into the team that will carry out the clearance and construction phases. For the [institutions as e-textbook publisher project](#), the Department of Philosophy and Nottingham University Business School provided their manuscript content and supporting images to the Learning Technology Team. The [Applied Ethics](#) book was contributed as a word file which was text only. The [Corporate Social Responsibility in Practice](#) (CSRP) book was contributed as multiple word files, with supporting media and instructions for how to build the book.

Clearance

This phase of the model looks at rights clearance, copyright issues and any IPR requirements. The Learning Technology team assessed the manuscripts and supporting images for potential copyright breaches; and where appropriate asked for clarification from the content providers to satisfy a number of copyright clearance categories:

- To ascertain if appropriate permissions had been secured for all third party content
- To ensure that where openly licenced content was used, correct attribution of the work was provided
- To ensure that where openly licenced content was used, appropriate licences had been selected

This process was straight forward for the Applied Ethics e-textbook which was mainly text based. It was more challenging for the CRSP e-textbook as multiple images had been used as had multiple third party sources. This stage can be simplified by being clear with authors at the outset about what (if any) third party content can be included in an e-textbook, and whether there is a budget available to support any rights clearances process that requires purchases to be made. Strategic decisions can also support a streamlined clearance process by, for example, by only accepting CC BY licenced imagery; or ruling out the potential for using orphan works. Considering your copyright approach ahead of commissioning and creation can make those processes easier. The level of appetite the institution or team is prepared to adopt to risk is also in play with this section. We take a fairly conservative approach to risk as we have no operational budget to deal with claims for payment for materials we might use. Whereas others may choose to use materials without clear provenance and follow a strategy to make payments if claims are made. It is also useful at this stage to establish records keeping processes and have policies in place for how you will deal with any third party complaints and how you may take down material if a legitimate challenge is made.

Construction

There are many approaches that can be taken in the construction phase. For the Applied Ethics etextbook multiple versions of the e-textbook were created, some for distribution through the Smashwords website which allows readers to download e-textbooks in multiple formats; and one for distribution through the Apple iBook store which would contain many images and some interactive elements.

Using this approach meant there would be three main file formats that would need to be considered in the 'Construction' phase in addition to a plain text version. The three main formats were:

- iBook
- Mobi
- Epub

Each of the three main formats have their own set of standards and principles that the learning technology team needed to be aware of.

iBook

- An iBook has a fixed layout with a specific height and width
- An iBook can only be viewed on Apple devices such as an iPad

- An iBook can contain interactive elements
- The iBook store will accept iBook's up to 2 GB
- Accessibility options are disabled for an iBook due to its fixed nature
- Text size, font's and colours cannot be changed by the reader

Mobi

- A Mobi version is required to view the book on an Amazon Kindle
- Mobi is more restrictive in its design and style capabilities than iBooks and EPub
- A Mobi is reflowable in that text is displayed fluidly on the device and can be altered by the reader for preference
- Capable of basic illustration imagery

ePub

- An ePub is the most universally compatible file format for ebooks.

The core technical requirements for this e-textbook were for the title to be:

- Available on multiple devices, allowing users to follow a 'bring your own device' approach to accessing the book
- To be available as a free download under Creative Commons Licence to both Nottingham registered students and the general public
- To link to polls that would ask readers' questions about each subject area covered in the book

As a part of the research into this project, the project team weighed up the pros and cons of creating eBooks that were reflowable or based upon a fixed width layout. A reflowable eBook is one in which there is no set widths or sizes of elements, with both text and images displayed inline and its styling very much being set by the device or software in which it is being read on. The benefit of a reflowable eBook is that the content will always fit the display of the device regardless of screen size and orientation. The downside is that this format lacks the possibility for a fully designed book and is not suitable for graphic intense projects.

A fixed width eBook is one which has its layout designed in a way similar to a printed book, with elements positioned on to a page with an exact precision. For this to be possible, the pages of the eBook must have a particular width and height set. Fixed width eBooks can be much more visually impressive, containing graphics and interactivity, however, problems can arise in the accessibility of the books over a number of devices with varying screen sizes, ratios and orientations.

An Apple iBook created using the iBooks Author software, by default produces a fixed width layout iBook to display only on an Apple device. Amazon's comparable e-textbook software is the Kindle Textbook Creator, which similarly creates fixed width books in its KF8 format to be viewed on the Kindle Fire range. A fixed width ePub can be created using layout design software such as Adobe Indesign.

As the works for the Applied Ethics project were primarily text based with only a small amount of interactivity, the project team concluded that the reflowable versions in addition to the fixed width iBook was still the appropriate way to proceed. This meant the project followed the original

production plan specified at the outset of the project. The choice of aggregator, Smashwords, did not support the KF8 format but instead supported Mobi for Kindle devices which are not capable with fixed width layouts. This would result in two options available to readers of the book based upon their preferences and also give the University a reasonable means by which to measure those preferences for the decisions made on future projects.

Using an aggregator

An aggregator is a service for independent publishers which allows them to consolidate their eBook distribution. Once the eBook has been uploaded to the aggregator's website, it is then pushed out to various eBook retailers where the eBook is available to the public. There are many aggregators with various benefits, restriction and costs associated with them.

Choosing an Aggregator

For the ePub and Mobi versions of the book, the project team used Smashwords as the aggregator for a number of reasons. Firstly, because the University had previously used its service and had begun building up a catalogue, and furthermore because of its distribution reach and cost effectiveness. However, it was necessary for the iBook version to be distributed directly through the Apple iBook store, as Smashwords does not support the iBook Author format.

Smashwords and Amazon

It should be noted that Smashwords' distribution to Amazon is limited. An author may request for their eBook to be distributed to Amazon if the book has earned at least \$2,000 with other Smashwords' retailers. As the eBook was made available for free for this particular project, this was not an option that the team would pursue. A possible way around this issue would be to include the book manually using Amazon's Kindle direct platform.

The content creation of the Corporate Responsibility Sustainability in Practice e-textbook somewhat followed the content creation and publication plan set out in the funding proposal submitted to Jisc. A plain text version of the e-textbook was authored by the academic team and passed to the Learning Technology team to construct the e-textbook. A number of videos, audio and interactive elements were also created by the academic team, and a number of third party sites and services were also suggested. The creation of the content was completed over a longer time period than originally planned and a number of different authors were allocated sections to work on.

At the outset of the project the technical solution for the creation of the e-textbook had not been fully defined. It was indicated by the project team that a similar approach to the Applied Ethics e-textbook would be followed in that the expectation was that an ePub version and iBook version would be created. However, as the e-textbook would be offered using a freemium model, the project team needed to investigate whether these tried and tested methods would be suitable for a freemium approach. Another factor that needed to be investigated was whether Smashwords, iBook store or other e-textbook platforms could allow access to some of the content for registered Nottingham students only, as this was a key requirement set out by the business school.

The full set of requirements that needed to be accommodated for the Corporate Responsibility & Sustainability in Practice e-textbook were:

- Control of access to different content and functionality for several different user groups
- An ability to capture and display learner responses
- An ability to update the content

- Interactive elements
- Video elements
- Audio elements
- PPT elements
- The need to provide a downloadable work booklet for MBA audience
- The need to restrict University of Nottingham (UoN) created case studies to Nottingham only audiences
- The need to control colour scheme and cover artwork
- Must meet the expectations of the Institute of Corporate Responsibility and Sustainability (ICRS) who licenced some of the content to UoN for the e-textbook

After much investigation, it became clear to the project team that existing 'off the shelf' e-textbook creation and publication software could not satisfy all of the requirements set down by the Business School. To move the project forward it was decided that Xerte on-line toolkits would be used for the all e-book development.

Rationale for Choosing Xerte

An **Apple iBook** would have allowed the Learning Technology team to include rich media and most of the proposed interactivity, however, due to the amount of videos and presentations, the file size would have been very large. We considered hosting videos on a server that would be streamed through the book. However, this would cause problems for those viewing the book offline, or the potential risk of high data charges for mobile devices connecting through 3g/4g networks who may assume that all content was embedded within the book.

Another problem was that Apple iBooks limit the audience to Apple devices, as well as the difficulty finding a vendor for sale of the iBook for a UK seller as the University only has a 'free' apple iBook account and the potential tax reporting burden of setting up a 'paid for' Apple iBook account was deemed too onerous for just one title. If a number of titles were being considered and a revenue stream could be proven, this may be viewed differently. Additionally to this, data capture and displaying of that data is not possible in the iBook software, beyond what is provided for note taking natively within the device.

Publishing the e-textbook as an **ePub** would open up more options for the commercial aspects of the book, however, there are much stricter standards for ePubs which would of made most interactivity difficult and would require a stripping out of multimedia to keep its file size within the limit.

A **website** would have allowed us much more control over content, interactivity and access, however, development would be much more extensive and would also require ongoing maintenance and cost.

Creating the e-textbook in **Xerte** allowed for the benefits of displaying the content like a website, with the additional benefit of a content management system which already sits on a server and is maintained and supported by the University Learning Technology team. Xerte was capable of the interactive elements, displaying rich media and controlling access as well as satisfying the other core requirements.

Compromises

The Learning Technology team investigated how to make the e-textbook resource commercially available using Xerte, looking into the potential for a paywall, whilst also allowing for portions of it to be available to the public. Due to the risks and potential future problems of taking this approach, access to the resource was reviewed and changed. A full version of this resource (7 chapters) would be available for free to Nottingham students on the MBA Module and members of ICRS, with a free version of the first three stages available to the public. In each of those free public facing versions there would be information about how to move through the freemium business model and access paid for content. One way of accessing the final 4 stages is to join ICRS. All of the chapters are available to institute members: <https://icrs.info/cpd/crs-in-practice>

Another way of accessing the content is to register for an MBA module at the University of Nottingham where the book is being used. Readers of the book are provided with the relevant email address to contact if they are interested in this option. Both these commercial models will be assessed for their impact over the next reporting period.

Tasks Booklet

Due to limitations in Xerte, we were unable to develop an appropriate method of allowing the user to undertake certain tasks directly within the e-textbook. This ideally would have involved forms that captured data and saved it to a database. However, Xerte does not have user accounts for viewers, nor contain a backend database that works with viewers of resources, only for the creation of them. Therefore, there was no feasible way of capturing and storing data. Neither was there a way of retrieving and processing that data.

The solution established was to include a downloadable task booklet that could be printed out and worked on side by side with the online e-textbook. The user of the Xerte object would reach a task page which would reference a particular task to undertake in the booklet referenced by a task number. The task book approach was also seen as extremely useful for the MBA audience who were reported to enjoy having the ability to work offline in this way.

Design Criteria

- Use of the Business Schools colours
- To respond to different screen sizes
- A clean, modern look and feel
- Accessibility at the heart of the design

In order to achieve the criteria, the design of the Xerte Object was achieved by extending on the theme's style sheet and working within the HTML source of each Xerte Page. Limitations of potential design were due to working within the boundaries of the Xerte framework and the requirement of creating something that fell outside of Xerte's conventional use.

Limitations included:

- The inability to control outside of the slides window
- Xerte's methods of determining height

Cataloguing

The upload and metadata cataloguing was completed by the Learning Technology team. For the Applied Ethics book we were using third party sites and therefore. We did not consider following any specific metadata schema outside what was being asked for by the sites we were using to publish to. This is different to how our OER publication process works where we have taking the advice of the University's metadata and cataloguing team to define the schema.

For the CRSP book we included some limited metadata available in Xerte.

Circulation

For the Applied Ethics e-textbook the circulation phase of the process was straightforward as the Learning Technology team were able to harness the distribution processes offered by both the Smashwords website and the Apple iBook store. These established platforms have clear paths to established markets.

For the CRSP e-textbook circulation was more difficult. Xerte does not have the same route to market as the established e-book platforms and therefore all work on circulation was and must be driven by the project team and particularly the academic team. This has been successful with over 6000 views of the material.

Connections

Building connections is the stage of the 6C model that the project team have reached with both e-textbook titles. Building connections will focus on establishing connections both with groups internally at Nottingham and external groups who may benefit from and be interested in using the e-textbooks. It will also focus on promotion work both internally and externally and will form a substantial piece of work for the remainder of the project.