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## **Textbook costs and accessibility: Could open textbooks play a role?**

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### **Abstract:**

Rising textbook costs have been highlighted as an issue for students in higher education (HE), particularly in North America. Less is known about the costs and forms in which books are available to students in higher education in Europe and specifically in Ireland. This is despite significant moves towards openly licensed books as a potential response via established open access publishing platforms. This research sought to address a gap in the scholarly understanding of textbook usage and the potential of open alternatives in Ireland. We present the results of an analysis of the accessibility, cost and licensing of textbooks in Ireland taking one higher education institution as a case study. We report here on the findings of phases one and two of this study, including the retail prices of over 500 books, the formats they are available in and those that are in the public domain. The next phase of this study involved the design of research instruments to use with staff and students as participants in research. These instruments were designed, with reference to the research literature on Open Education Resources (OER), such as Wiley's 5 Rs of OER, to examine the current usage and perception of educational textbooks with the overarching aim of determining the relevance of digital open textbooks in the Irish context.

### **Keywords:**

Textbooks, OER, open textbooks, digital learning, research methods, focus groups.

## Introduction

Studies conducted in American universities in the last few decades strongly indicate that textbooks impose a substantial financial burden on students, putting an additional strain on their finances. Remarkably, textbook prices have increased by four times the cost of inflation in the last twelve years (Vitez, 2018). In response to this, the movement to create and encourage the adoption of Open Education Resources (OER) has gained momentum. OER are free and openly available online, and they can include open books. OER have been defined by UNESCO as related to “The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes” (UNESCO, 2002). Open textbooks are educational texts “with an ‘open’ copyright license allowing the material to be freely accessed, shared and adapted. Open textbooks are typically distributed online at no cost and can be purchased in a variety of either print and/or digital formats at a low cost, including hard bound copies” (Student PIRGs, 2017).

Open textbooks have been published through specific platforms, such as OpenStax. These providers typically are digital first, open access, and make books freely available online, under a Creative Commons licence (Hilton, 2016). Equally importantly, publishers of open textbooks have striven to ensure the development of high-quality teaching resources: firstly, through the academic expertise of authors; and secondly, by adding peer-reviewed processes. In March 2018, a substantial government grant, amounting to USD \$5 million, was passed into law by the U.S. Congress, to encourage the adoption of open textbooks in universities, marking the first major investment in OER at this level (Allen, 2018).

While open textbooks are becoming increasingly widespread in North America, including Canada, in Europe their adoption is less noticeable. In the UK, a major project, the UK Open Textbook Project, was commenced in 2017 to investigate the possible adoption of open textbooks in UK HE, based on North American models. Research is currently ongoing, with an online survey on open textbooks being circulated among teachers (UK Open Textbook Project, 2018).

In Ireland, however, the OER movement is currently fragmented: the National Digital Learning Resources initiative was closed in 2012. The initiative had the aim of promoting collaboration, development and sharing of learning resources among Irish HEIs (McAvinia and Maguire, 2011). Started as a pilot in 2005, it graduated to a full project in 2010, before being closed, and the funding withdrawn, in view of the mixed results obtained. Furthermore, recent Irish policy reports, such as the *Roadmap for Enhancement in a Digital World 2015-2017*, do not make much mention of textbooks; similarly, no reference was made to open textbooks in the Irish section of a recent European report describing open learning initiatives in 28 EU countries (Inamorato dos Santos et al, 2017; Brown, Costello and Nic Giollamhichil, 2018). Last but not least, a scan of the Irish higher education sector we conducted found little evidence of Irish open digital textbook initiatives, e.g. a Google Search typing the terms “open (digital) textbook”, “Ireland” and “Irish higher education” yielded only one relevant result, a 2010 Twitter stream (Brown, Costello and Nic Giollamhichil, 2018). However, a 2015 study of OER was conducted with academic staff, librarians and technical

officers from 4 different Irish universities. The study, which included a survey and focus groups, highlighted some confusion around OER, which were mainly used to supplement teaching rather than as primary resources. The chief recommendation emerging from the study consists of delivering a module on OER for all academics, as part of their professional development (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2015). What all of the above highlights is that there is almost no discussion on textbooks, as one of the primary learning resources in higher education in open ed and specifically on their cost and what role open alternatives might play.

### **Formulating a Response**

In response to the dearth of OER initiatives, and to the lack of systematic knowledge and studies on textbooks in Irish higher education, we initiated a research project in the area. One premise we started from was the hypothesis that textbooks are as expensive in Ireland as they are in North America. If this was found to be true a second hypothesis would be that the adoption of an open textbook module could help alleviate the problem associated with textbook costs. The project hence aims to gather an understanding of the use, practices and impact of textbooks in Irish higher education, and to analyse perceptions of, and opinions about, open textbooks.

The research aims are as follows:

- To establish the lived student reality of textbook use, re-use and non-use in Ireland.
- To fundamentally question the role and value of textbooks in 21<sup>st</sup> century education in Ireland (Brown, Costello and Nic Giollamhichil, 2018).
- To gather data about costs of textbooks, considering that they can vary substantially across disciplines and courses.
- To gain an understanding of the importance for students and academics of traditional print versus digital textbooks.
- To establish the level of awareness, understanding and participation of students and staff with regard to OER, including open textbooks.

The project has been designed to comprise four phases. Each successive phase builds on the previous one. The first phase involved an initial literature review and desk research. The second phase involved an empirical investigation of prices of textbooks in one Irish higher education institution. The third phase, which is in progress, involves qualitative research on staff and student perceptions of textbooks and the potential implications of open textbook and OER practices and policies. The fourth phase involves a wide scale national survey.

It is envisaged that the results of this project will be widely shared with other education institutions. Without a doubt, other Irish higher education institutions will also benefit from the knowledge of textbook costs and practices and of open textbook awareness which the research set out to gather. Furthermore, it is very possible that other European countries will also benefit from an analysis of

the data we have gathered and of the data we will collect, albeit with specific modifications, tailor-made to suit local contexts.

### Overview of Phases One and Two: Textbook Cost and Availability Empirical Investigation

Phases one involved research that is more fully reported elsewhere (Brown, Costello and Nic Giollamhichil, 2018) but which we will provide a synopsis of here. The first phase consisted of a comprehensive review of the extant literature and desk research on the state of play of textbooks and open education in Ireland. Something that is apparent from the literature is that there is very little hard empirical data on commercial textbook costs reported. In order to address this, we embarked on phase two of the project, by downloading the information from one Irish higher educational institution's course catalogue, that included the required and recommended textbooks for students enrolled in the institution. The catalogue was freely available, on a database powered by software known as Akari. Given that nearly 4,000 books were found, we needed a programmatic solution to generate more information on those books automatically. To this end, we used Google Books API, the interface to the Google Books database of over 25 million books. The Google Books API is forgiving of mistyped or misspelled search queries. We then developed and applied a Javascript middleware programme to process these results and analyse the 2,940 books that were found in the Google Book database. We made the software code and results obtained available under an open license on the Zenodo publishing platform for Open Science (Costello and Bolger, 2018). The architecture of the system is shown in figure 1 below.

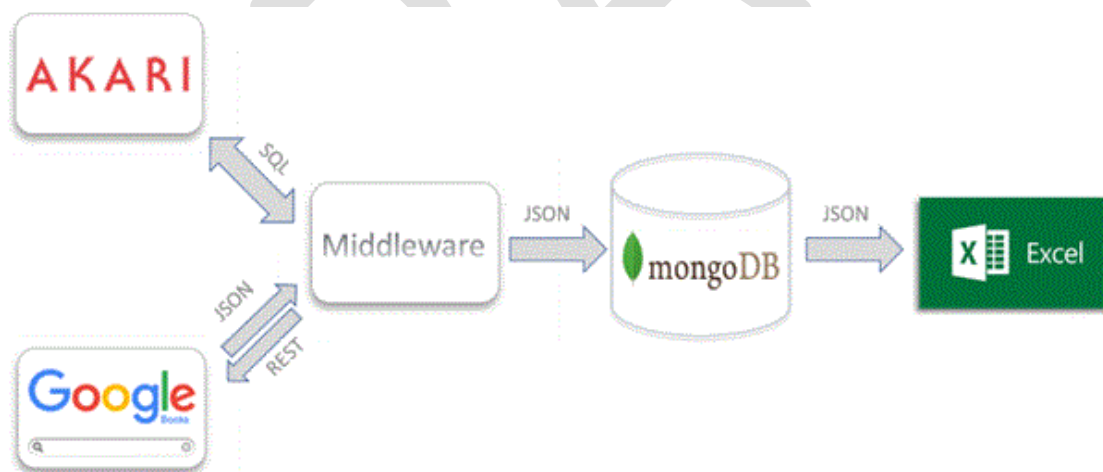


Figure 1. System Design (Brown, Costello and Nic Giollamhichil, 2018).

Of those 2,940 books, 71.5% were required readings, and 28.5% recommended. Prices were returned from the Google Books API for 596 books. They ranged from \$0.99 to \$452 with a median price of \$40. For a summary of book prices, see Figure 2 below. There were an average of 3.96 books per course, and an average 8.05 courses were taken by students per year. Hence, we calculated that the total cost of new books—both required and recommended—could amount to \$ 1,806.50 per

student per academic year. Just under 40% of books had electronic versions. Only 0.18% (6) books had a version available under an open license according to the data available from Google Books.

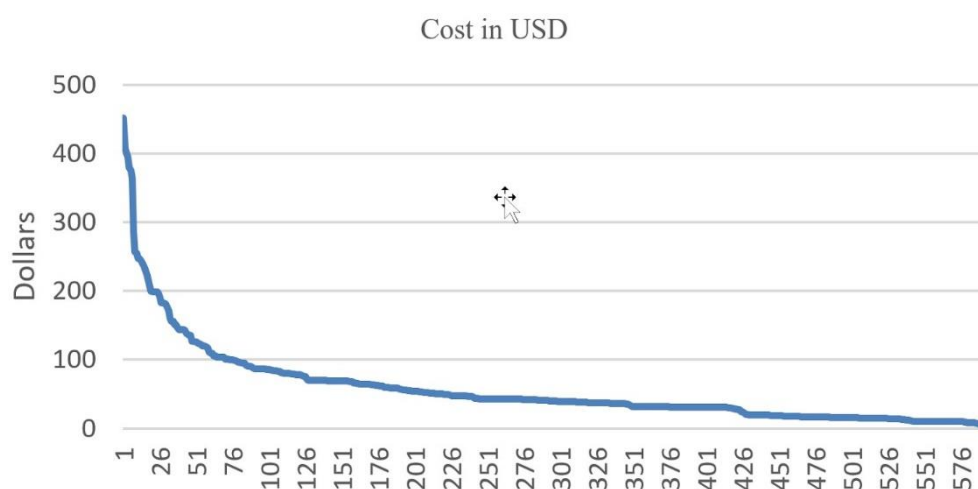


Figure 2. Summary of Book Prices ( $n = 596$ )

In May 2018, we received ethical approval from our University Ethics Review Committee (Ref: DCUREC/2018/111) to conduct qualitative research with focus groups. Our aim is to help come to an understanding of students and staff practices regarding textbooks. It is planned to conduct the focus groups in summer 2018, and at the beginning of the 2018-2019 academic year.

The data gathered from an analysis of the focus group discussions will then inform a survey, to be circulated more nationally to students and staff in Quarter 3 of 2018. The survey will help triangulate findings from the preceding phases with a much larger sample of data and according to a well-informed research instrument.

Next, we are going to focus on the design of phase three of the project. We will discuss the methodological rationale to the use of focus groups in our research and the theoretical elements that informed the development of the research instrument i.e. the focus group schedules.

### **Design of Phase Three: Participant Perception of Textbooks**

Phase three of the research project involves listening to staff and students about their actual lived experience of the use (or non-use) and perceptions of textbooks. To situate this, we will first introduce some relevant existing research in this area. Hilton (2016) in analysing the state of the art

of research on open textbooks identified 9 peer-reviewed studies (of 50 participants or more) on student and staff perceptions of open textbooks or OER as textbook replacements. A potential limitation of this line of research, however, is the lack of detail on how the research designs were informed by a theory or model of open education (Dieman and Farrow, 2013). Typically, such studies, with good pragmatic reason, focus closely on perceptions of cost and quality. We too drew on these concepts, including on the wider literature on textbook cost (Silver, Stephens and Clow, 2012) in the design of our focus group interview schedule. However, we also sought to interrogate the actual basis of and for OER by testing more widely some of the OER principles that have been advocated.

There are various definitions of open education. It has been argued that the tradition of open education goes back several centuries in various guises (Peters, 2008) particularly if we frame it in a broad sense, related to increasing access of education as a public good (Peter and Deimann, 2013). Open Education may “be seen as a response to, or at least as part of, a broader social change made possible by digital technologies” (Weller, 2011). It was later elaborated by Weller (2015) to encompass a broad set of ideas comprising: the freedom to reuse; open access; free in cost; ease of use; digital, networked content; social/community approaches; ethical arguments for openness; and openness for efficiency. Whilst bearing these ideas in mind we also sought to include specific principles focused on open educational resource use that would be easily comprehensible to staff unversed in the traditions of open education. To this end we drew on the simple but powerful framework of the “5 Rs of Open Resources”. The concept was first theorised by Hilton et al (2010). At that stage, however, only 4, rather than 5, Rs, were asserted as salient characteristics of OER; they go as follows:

- Reuse= the right to use content in a wide variety of ways.
- Revise= the right to adapt, adjust, modify and alter content.
- Remix= the right to combine a certain content with other content.
- Redistribute= the right to share copies of the original content, and/or of revisions or remixes.

(Hilton et al, 2010).

Latterly, Wiley (2014) added another R as a fundamental characteristic of OER:

- Retain= the right to make, own and control copies of the content.

This fifth R arose in response to commercial textbook publishers devising models of digital rental to students, where the rights to the rented copy would expire after a period of time.

**What needs do lecturers have around textbooks?**

In designing the questions for all the focus groups, we drew on the five principles of OER. Most noticeably, however, the questions for staff have been informed by all 5 Rs of OER. This is a reflection of the greater involvement of lecturers traditionally in the development or selection of learning materials and resources and the fact that some of the 5 Rs relate directly to content creation. Open educational practitioners have reported on, and advocated for, highly participatory models where students are actively involved in the development of books or learning resources (Hodgkinson-Williams and Paskevicius, 2011). Students may indeed be engaged in public scholarship to this end, developing their own open textbooks (DeRossa and Robinson, 2017). Students can, according to partnership models of education more broadly (Healey, Flint and Harrington, 2014), be co-creators of teaching approaches, course design, and curricula (Bovill, Cook-Sather and Felten, 2011). However, we expect that most lecturers will be more familiar with contexts where they themselves are the principal developers or curators of learning resources and materials for students. Hence, we specifically developed the following questions, addressed to academic staff, derived from the 5 Rs:

- a. Reuse. Do lecturers ever need to re-use something from a textbook such as a figure, an image, etc. in another context, e.g. on PowerPoint slides? (question 7 below)
- b. Revise. Would you, or lecturers you know, ever need to take something from a textbook and adapt or modify it? (question 9)
- c. Remix. Would lecturers ever need to mix content from multiple textbooks? (question 8)
- d. Redistribute. Do lecturers share any such adaptations beyond their classroom? (question 10)
- e. Retain. Is it important for students (or indeed staff) to have access to books beyond the life of a course/module? (question 11).

#### **What needs do students have around textbooks?**

Due to the lesser requirement traditionally on students in the development of learning resources, a different set of questions were designed for the student focus groups, though they also map to 3 of the relevant principles derived from the 5 Rs. The relevant questions are:

- a. Revise/Remix. What is one thing that lecturers can do to improve students' textbook experience? (question 8 below)
- b. Retain. Do students need to keep textbooks beyond the course/module? Or might they wish to? And what implications might this have? (question 6).

The full details of both focus group question schedules are given in Appendix A.

The other questions were designed with the aim of gathering general knowledge of textbook costs in an Irish third-level education institution, as well as of perceptions, attitudes and practices towards them, and also the use of hard copy versus digital versions of those books. We next introduce some of the research we drew on in formulating these questions.

In the last two decades, for the first time, books have been available in a new format: digital or electronic. Electronic books fall under two principal types: as scanned PDF copies of print textbooks, or as reflowable digital textbooks. The latter have the advantage of including interactive features, e.g. hyperlinks and discussions (Jhangian et al, 2018). Digital textbooks have increased because of their lower cost and convenience. Many studies have analysed the influence of textbook format on learning, with mixed results. For example, Daniel and Woody (2013) claimed that students' performance remained unchanged, regardless of whether they used electronic or print versions of the same textbooks. Significantly though, reading times were longer for e-textbooks than for their print counterparts, presumably because students were more likely to engage in multitasking while reading electronic textbooks than while reading print books (Daniel and Woody, 2013). It seems, however, that most students prefer print to digital versions, regardless of gender or of previous familiarity with computers (Shepperd, Grace and Koch, 2008; Woody, Daniel and Baker, 2010); an inability to take notes or highlight text were among the main reasons provided (Jhangian et al, 2018). It is thus unsurprising that e-textbooks are far from being as popular as e-books in general.

Nonetheless, the review previously mentioned, synthesising the results of 16 empirical studies, focussing on OER efficacy and perception among students and staff, based primarily in North America, indicates that "OER are comparable in quality to traditional learning resources" according to most students and academic staff (Hilton, 2016).

These findings may appear contradictory: on the one hand, e-textbooks seem to hold less appeal for students, because they require longer reading times, or because reading on screens puts a strain on students' eyes; on the other hand, both students and staff seem to like OER, because they are free, easily accessible and adaptable. The issue here is the separation between books' formats, i.e. print or digital and their type of licensing, i.e. commercial or open. Theoretically, both commercial and open textbooks can be accessed in both digital and print formats, though it may be that commercial textbooks are more often accessed in print format, while open textbooks are more often accessed in digital format. Our research will attempt to untangle these issues through dialogue with students.

### **Focus Group Design**

We highlighted the importance in a previous section of the role students can play in Open Educational contexts with regard to their input to teaching scenarios. This can also be seen more widely in the context of moves to involve students as partners (DeRossa and Robinson, 2017; Healey, Flint and Harrington, 2014; Bovill, Cook-Sather and Felten, 2011). In keeping with this approach, our research methodology is informed by interpretivism and a concomitant dialogic approach where we sought to engage students in conversations about their learning. Focus groups are one useful research method for data collection that follows from this approach. Focus groups are relatively small, usually including between three and ten people per group (Sharp, Rogers and Preece, 2007; Krueger, 2002). Since participants should feel relaxed, and not be afraid of voicing dissenting or even



troublesome opinions, it is recommended that focus groups include similar types of people (Krueger, 2002). Hence, we will form two separate focus groups for students and staff: if asked to talk about textbooks alongside lecturers, for example, students may feel uncomfortable because of power imbalances, and they may not disclose their real practices. The main benefit of focus groups is that they allow for diverse or sensitive issues to be raised in a relaxed environment (Krueger, 2002), within a social context. We will have two facilitators or moderators: a principal one, who introduces the session, asks questions, and brings the session to an end; and an assistant moderator, who is in charge of the logistics and takes notes. Focus groups involve a pre-set agenda posed by the moderator's questions; however, participants are at the same time free to suggest new ideas (Sharp, Rogers and Preece, 2007). We sought to develop open-ended questions, while avoiding dichotomous questions, which can be answered with a mere 'yes' or 'no'. Further we planned our questions to follow a sequence starting from the general, moving on to the more specific (Krueger, 2002). Finally, we aimed to design questions that could be addressed to the group as a whole, rather than to the singular individuals, e.g. "What do students think" rather than "What do you think?", to encourage a sense of participation, and so that students may feel willing to share the experiences of their fellow classmates rather than just their own.

Four focus groups will be assembled, three of which will be composed of students, and one of staff members. We have received permission from three Heads of Schools, as well as from the students' union president, to recruit students and staff for the focus groups and ethical permission from our institutional Ethics Review Committee to undertake the research.

The reason why we have decided to target primarily students rather than academic staff is because staff members have already been involved in an empirical research on OER in Ireland, in 2015, while students have not. Over 200 professionals have either answered a survey, or participated in focus groups, specifically on OER. It is important to bear in mind, however, that the study was limited, in that participants were self-selecting (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2015).

Each group will include between six and ten participants. It seems that this is the ideal number of participants, as suggested by Sharp, Rogers and Preece (2007), and corroborated by the experience facilitating groups of similar sizes in tutorials and workshops by authors of this paper using methods such as World Cafe (Prewitt, 2011). A total cohort of between 24 and 40 participants will thus be formed.

The discussions from the focus groups will be recorded and then analysed according to thematic analysis by the research team. Thematic analysis—a term coined by Holton in the 1970s—is a method used to analyse qualitative data, common in psychology and social sciences. It "involves attention to the constructive role of language, and multiple and shifting of meanings", but retain a specific interest in *patterned* meaning (discourses) within the dataset (Clarke and Braun, 2014). It consists of the generation of codes and themes from qualitative data. The codes are interesting features of the data, of relevance to the research question; themes are then constructed from the codes.

## Conclusion

Our project to investigate use and perceptions of textbooks in Irish higher education and about open textbooks is a work in progress. Through phase one, via literature review and desk based research, we firstly established that there was a lack of knowledge of the potential of open textbooks in Ireland to address issues of cost and accessibility for students (Brown, Costello and Nic Giollamhichil, 2018). We determined some extent of the scale of these textbook costs through the phase two analysis of a sample of textbooks either required or recommended as readings to students in Irish higher education (Brown, Costello and Nic Giollamhichil, 2018).

We are now taking steps to organise focus groups, with both students and staff, to gain deeper understanding of the real use (or non-use) of textbooks. This qualitative research will inform a survey, which will be circulated more widely among students and staff nationally in Ireland in Quarter 3 of 2018. It is hoped this study will pave the way to develop awareness of, and to encourage the creation and adoption (Costello, 2014) of, open textbooks in Irish Higher Education. We are reminded of the words of the British novelist, Mark Haddon: "Reading is a conversation. All books talk. But a good book listens as well" (Haddon, 2004). The same holds true for textbooks, as well as for research. It is only by listening to students and staff that we will be able to assess the practices around textbooks and OER in Ireland, thereby identifying patterns, trends, and areas for innovation and improvement.

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**Appendix A****Staff Focus Group Interview Schedule**

1. As a university lecturer, do you prescribe textbooks?
2. What is your opinion of textbooks? Do you value them?
3. What are lecturers' perceptions of print versus digital forms of books?
4. What considerations do lecturers make to the cost of books for students?
5. How often do lecturers change textbooks?
6. What are lecturers' perceptions of textbook publishers?
7. Do lecturers ever need to re-use something from a textbook such as a figure, an image etc. in another context e.g. on PowerPoint slides?
8. Would lecturers ever have need to mix content from multiple textbooks?
9. Would you or lecturers you know ever need to take something from a textbook but adapt or modify it?
10. Do lecturers share any such adaptations beyond their classroom?
11. Is it important for students (or indeed staff) to have access to books beyond the life of a course/module?

**Student Focus Group Interview Schedule**

1. As a university student, do you use textbooks?
2. What is your opinion of textbooks? Do you use them and do you value them?
3. Do you buy or borrow textbooks? If you buy them, do you buy them from the campus bookshop or online? New or second-hand?
4. How much money do you approximately spend on textbooks per academic year?
5. Do students usually read hard copies of books, and/or digital copies online?
6. Do students need to keep textbooks beyond the course/module? Or might they wish to? And what implications might this have?
7. Are you aware of Open Education Resources?
8. What is one thing that lecturers can do to improve students' textbook experience?

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