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# Developing a Corequisite Writing Textbook: How Two Novices Handled the Complex Nature of Open Textbook Production

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## Abstract

Despite the growing body of scholarship focused on Open Educational Resources (OERs), studies tracking open textbook production are exceedingly rare. To gain insight into the complexities associated with open textbook development, this article's authors used concurrent verbalisation and pre- and post-concurrent verbalisation interviews to document writing episodes while composing their first coursebook, an open-source text designed for corequisite course pairings of writing fundamentals and introduction to technical writing. Corequisite classes combine content-area instruction with explicit skill-building opportunities, and although commercial publishing houses do produce corequisite textbooks for traditional general education courses, the authors were impelled by the need to create a specialised coursebook for a STEM-focused writing corequisite. Qualitative content analysis of the data collected during ongoing coursebook development revealed how the novice textbook authors navigated complexities when sourcing material for the book, formatting content, and embedding hyperlinks into chapters. Open textbook development offers a variety of professional development opportunities, and the details provided herein could be instructive to others embarking on open coursebook projects and inspire further inquiry into ongoing open textbook production. This paper also exposes the dynamic interaction between textbook content as designed and operationalised, offering implications for the research field of materials development.

Keywords: complexities of open textbook production, concurrent verbalisation, corequisite textbooks, novice textbook authors, ongoing textbook development

## Introduction

### Acknowledging the complexity of textbook production

Materials development research has exposed a host of complexities associated with commercial textbook production, and the extant body of applied linguistics literature has much insight to offer in this respect. Gray's (2002) research in the area of ELT (English language teaching) textbook development, for instance, revealed the commercial publishing conditions that may constrain the inclusion of particular textbook content based on appropriateness; such restrictions can lead to the production of books similar in flavour and appearance, asserted Maley and Kiss (2018, p. 108). Publishing conditions may also hold sway over the design of textbook pages, as ELT coursebook writers Bell and Gower (2011)

discovered. One of the ELT coursebook authors in Atkinson's (2021b) research emphasised the role that design has to play in heightening the approachability and usability of textbook pages—making layout a pedagogic concern for writers—and likewise illustrated that length restrictions, which might apply at the chapter and whole-textbook level, add further complexity to commercial textbook projects. Kiai's (2014) interviews with writers who coproduced an ELT textbook for Kenyan secondary schools revealed that project deadlines and other employment obligations represent additional complications that can affect a textbook author's efforts. Writing about his experiences of coauthoring an EAP (English for academic purposes) coursebook, Swales (1995b) relatedly mentioned the substantial time that textbook projects demand, revealing another complicating aspect of authorship (see also Warriner & Morris, 2020, p. 240 for mention of the extended time it took to produce a cardiology textbook). Swales (1995a) similarly acknowledged that the quest for writing perfection can hinder a textbook project's progress. In a subsequent publication, Swales (2009) also discussed the challenge of sourcing textbook material that is immediately comprehensible and relevant to learners. The degree of transparency associated with an author's pedagogic intention for textbook content can add a further layer of complexity in terms of user experience, as the English language learners interviewed in Jou's (2017) study revealed. Even the perennial debate about the value of textbooks in education can colour a coursebook writer's efforts, as Feak and Swales (2014) explained.

Contributions outside the ELT realm also evidence the complexity inherent in commercial textbook writing and speak to the competing priorities that make demands upon an author's work. Cost-effectiveness and marketability are ever-present concerns for publishers, contended Lee and Catling (2016) when writing about geography textbook production in England, such that authors may need to scale back their ambitions regarding content delivery. Cost concerns indeed prompted Williams and Davidow (2019) to devise their own textual examples instead of incorporating samples from published works when producing a creative writing textbook. Writing about the production of commercial psychology textbooks, Sternberg and Hayes (2018) attested to the overarching focus on marketability by explaining that authors must review competitors' products to convince publication staff that their books offer the ideal balance of innovation and familiarity in terms of coverage and presentation. Sternberg (2017) added that textbook writers working in the field of psychology must consider instructors' perceptions about how classes should be taught and the amount of time they have available to integrate new books into their courses in order to gauge the level of novelty appropriate for their projects.

As might be gathered from the discussion thus far, much of the materials development research has focused on the production of textbooks for commercial distribution; however, complexities also reside in the process of open coursebook development. Open textbooks exist as a subset of the larger grouping of open educational resources (or OER), which the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2021) has defined as cost-free digital and other materials that can be adopted or adapted with few restrictions to support research, learning, and teaching. Although open textbooks do not compete for adoption in the commercial marketplace, can typically be updated and adapted as desired (West, 2019, p. 232), and are immediately available to students at the start of classes (Ozdemir & Hendricks, 2017, p. 105; Petrides, Jimes, Middleton-Detzner, Walling, & Weiss, 2011, p. 43), their development nevertheless necessitates careful consideration on the part of writers. In a case study focused on the production of an open textbook for learning and instructional design technology, West (2019, pp. 227–228), for instance, cited a number of technological challenges that can complicate an open textbook author's efforts, including lack of an off-the-shelf book production program that is reasonably priced, can produce content that is readable across multiple computer operating systems, and can easily accommodate images. In terms of the considerable time that open textbook writers normally dedicate to learning the particulars of publishing platforms—sourcing, adapting, creating, and editing book content; and

designing chapters and pages—Wang and Wang (2017, p. 232) and West (2019, p. 234) made the important point that the open textbook model shifts services traditionally provided by commercial publishers onto faculty authors, impacting their workloads. Jung, Bauer, and Heaps (2017, p. 138) used a survey to gauge faculty perceptions of open textbooks and found that some respondents integrated hands-on exercises into their lessons as a result of using the texts and assessed their pedagogy more effective as a result. However, producing coursebooks that prompt such activities and incorporate quality content calls for some level of authorial compensation, and a lack of consistent funding for projects is cited as a challenge to open textbook development (see, e.g., McGowan, 2020; McKenzie, 2020). Depending on their departmental standards, faculty who produce open coursebooks may also receive little to no recognition for their efforts when it comes to promotions, observed Jhangiani, Green, and Belshaw (2016, pp. 180–181), calling into question the sustainability of the open textbook movement. The literature indicates that other types of rewards may nevertheless be gained by producing and using open textbooks. Finlayson (2020, p. 246), for example, asserted that instructors who develop open textbooks may experience an enhanced sense of reflexivity relative to their teaching practices and gain pleasure through the creative process of converting their pedagogic materials into cohesive texts, and Nusbaum and Cuttler (2020, para. 20) found that faculty who used open textbooks in their classes received higher course evaluations than those who assigned commercial texts. Lastly, Morris-Babb and Henderson (2012, p. 151) observed that instructors who develop open textbooks can tailor them to their courses rather than the converse, as is sometimes the case with commercial products. The affordances and constraints overviewed here illustrate the range of complexities associated with open textbook production.

Despite the growing body of scholarship dedicated to open textbooks, the authors' review of the existing materials development literature failed to identify any investigations, apart from Atkinson and Corbitt (2022), that tracked the production of open coursebooks during writing episodes. Bradley and Vigmo (2016) similarly observed the paucity of research focused on the particulars of OER design. This research gap is an important one considering ongoing efforts to promote open textbooks as alternatives to commercial offerings: indeed, the void would seem to downplay the seriousness of their viability in this regard. Moreover, a lack of empirical research into open coursebook production may obscure its complexity and perpetuate a reductive conception of materials development as activity that is instinctive to teachers and requires little forethought, reasoning, or in-the-moment decision making, misconceptions that Samuda (2005) endeavoured to dispel. Though not focused specifically on open textbook development, several investigators, including Lee and Catling (2016, p. 51), Otto (2018, p. 95), and Tomlinson and Masuhara (2018, p. 117), have noted the dearth of empirical studies focused on textbook authorship; still others, such as Atkinson (2021b, 2022) and Harwood (2017, 2021), have gone further in calling for in-depth investigation of the processes and behaviours that writers demonstrate during unfolding composing sessions as a means to expose the complex nature of textbook writing work. In a similar vein, Mishan (2021) and Swan (2018) have noted the near invisibility of textbook authors in the materials development scholarship, and Harwood (2010, p. 20) observed that apart from rare exceptions, textbook authors and materials development researchers operate in separate professional capacities, resulting in a divide between the practical and the empirical.

## Researching the development of an open corequisite writing textbook

With this divide clearly in focus, the current study delves into the intricacies of textbook development by focusing on coursebook writing episodes as they unfolded during the creation of *Mindful Technical Writing: An Introduction to the Fundamentals* (Atkinson & Corbitt, 2021), an open textbook designed for corequisite course pairings of writing fundamentals and introduction to technical writing. Corequisite models are meant to reduce time to graduation for those students who place into developmental

university classes by combining remedial modules with credit-granting courses, eliminating the need for students to complete the requirements during separate semesters (Avni & Finn, 2019, p. 55). Although corequisite models offer shortened pathways to degree completion by mingling content-area instruction with explicit skill-building opportunities, a lack of dedicated corequisite materials has been cited as a barrier to implementation (Daugherty, Gomez, Carew, Mendoza-Graf, & Miller, 2018, p. 11). Keen to address this market, commercial publishing houses have responded in kind by adding corequisite titles to their catalogues, but the books overwhelmingly target traditional general education classes rather than specialised course pairings. The current article's authors entered into this situation as neophyte textbook writers impelled by the need to create a coursebook for a STEM-focused writing corequisite that centered on the development of effective study techniques alongside workplace and academic writing skills. Cognizant of the dearth of research focused on open textbook production and calls for in-depth inquiry into materials writing, the authors used concurrent verbalisation (thinking aloud while writing) and pre- and post-concurrent verbalisation interviews to track the progression of their open corequisite textbook in fine-grained detail and addressed the following research question: How do novice textbook writers manage the intricacies of open textbook production while composing chapters? By documenting their practices during writing episodes and using qualitative content analysis to analyse the resultant data, this research exposes the emergent complexities of open coursebook development and how two novice textbook authors negotiated them in real time.

The term *novice* here refers to the authors' lack of textbook-writing experience; nevertheless, both had developed materials for use in their own classrooms prior to the inception of their textbook project, meaning they had experience in a like area. More specifically, Atkinson, referred to here as TWD (Textbook Writer Dawn), had 15 years of experience in developing materials for university-level EFL (English as a foreign language), EAP, and writing classes, while Corbitt, referred to as TWS (Textbook Writer Stacey), had 11 years of experience in producing materials for university-level writing and sociology courses. Researchers who investigate the distinguishing qualities of *experts*, individuals recognised by virtue of their exceeding performance in discrete domains of operation (Johnson, 2010, p. 217), have identified an assemblage of factors that contribute to expertise development, with domain-relevant experience being one of them (Ericsson, 2018b, p. 745). Although expertise is generally thought to be domain-specific, transfer of knowledge and skills to adjacent domains has been shown to occur. Atkinson (2021a) detected transfer effects, for instance, when studying the operations of two expert ELT textbook authors who called upon their experiences working in the associated domains of English language teaching and teacher training when writing. Salisbury (2005) likewise noted evidence of transfer when researching the expertise of participants who composed listening questions for international EFL exams: they tapped experience gained in the areas of oral examining, test marking, textbook writing, EFL teaching, and other-skills exam writing to support their work. The authors mention these points in an attempt to redress what Lee and Yuan (2021) identified as a tendency to characterise experts as all-knowing and novices as the complete opposite. Bereiter and Scardamalia's (1993) widely cited expertise theory indeed contradicts that notion since it constructs an image of experts as individuals who continuously strive to learn from their work and reinvest their mental resources as a means to further develop their skill sets; in this regard, expertise is less a state than a mode of operation.

Though the materials development literature is not replete with accounts of novice textbook authorship, the approach has been used, albeit in project reports based on authors' recollections of textbook production, which convey their insights in broad terms but generally do not reveal the moment-to-moment details of writing sessions that aspiring textbook authors might find useful. Gottheim (2010), for example, characterised herself as a non-expert when she retrospectively discussed her ideas for produc-

ing a coursebook to teach Portuguese as a second language, and Warriner and Morris (2020) acknowledged they had no textbook writing experience when recounting their development of a cardiology text. The cohort of ELT textbook writers interviewed in Kiai's (2014) study also included a number of novice authors, as did the writing team in Popovici and Bolitho's (2003) reflective account of an ELT coursebook series produced for Romanian schools. What sets the current investigation apart is its focus on two novices as they operated *during* writing episodes, and it expands the scope of materials development research by concentrating specifically on the emergent area of open textbook production. In particular, it reveals how the authors navigated complexities when locating source materials, designing pages, and embedding hyperlinks into chapters. The details provided herein may inform other open textbook projects and inspire further inquiry into ongoing textbook production. They also reveal the intricacies associated with devising functional textbook content, a finding pertinent to the research field of materials development.

## Undertaking the open textbook project

During the initial stage of the open textbook project, TWD and TWS compiled a scope and sequence to plan the book's 43 chapters and then refined this document as the book progressed. The chapters concentrated on topics central to workplace and academic writing, as well as college success, and the authors called upon their experiences teaching corequisite pairings of writing fundamentals and introduction to technical writing when charting their direction. Taking a cue from the EAP materials development tradition (see Hamp-Lyons, 2011), they utilised a needs analysis approach to specify the inclusion of content with target learners and teachers (audiences), course outcomes (purposes), and essential genres (rhetorical constructs) in mind, and they divided the chapter workload based on their interests, backgrounds, and competencies in order to maximise coursebook quality and momentum. Writing chapters on an individual basis also enabled them to fit textbook production around other workplace commitments and collect data during ongoing textbook production.

TWD and TWS also took into account the textbook's contextual setting for use—specifically, corequisite course pairings—when conceptualizing its format since they planned to utilise the book at their home institution and post it to the *Open Textbook Librar*y (https://open.umn.edu/opentextbooks), an OER referatory, for wider institutional consumption. To facilitate the text's use in semester-long or stretch corequisite configurations, they decided to build flexibility into its design by developing modular chapters with substantive coverage of key areas and recurring links to corequisite course concepts so that instructors and students could customise reading assignments relative to their needs, as Frydenberg and Matkin (2007, p. 12) recommended when discussing modularity and open textbook production. The modular design principle also encouraged the inclusion of numerous extensive reading, critical thinking, and writing opportunities, as well as various interactive exercises, including writing process activities focused on planning, drafting, peer reviewing, and revising, to support the growth of learners' literacy skills, inspire them to engage with coursebook content, and provide instructors with jumping-off points for lessons. The hands-on activities were also incorporated to stimulate instructors' confidence in their pedagogical reasoning skills, the sophisticated thinking that enables teachers to assess the functionality of educational materials and their capacity for addressing course objectives (Richards, 2010, p. x). Johnson et al.'s (2008) research in the area of ELT textbook evaluation revealed the importance of these types of activities, as well as structured coursebook content, to novice teachers.

## Collecting and analysing data[1]

Since their research sought to track ongoing open textbook development in fine-grained detail, the authors selected concurrent verbalisation as their primary means of data collection. Concurrent verbalisation documents the particulars of composing sessions by prompting participants to think aloud while working, and its immediacy has the potential to capture specifics about textbook writing that might be omitted or forgotten in reflective project accounts (Atkinson, 2020, p. 480). Abdel Latif (2019) indeed found that concurrent verbalisation provided a greater level of detail about actual composing processes than did post-concurrent verbalisation interviews when he collected data on undergraduate student writing. The method also has the capacity to generate an extensive body of rich data, which is why TWD and TWS decided to produce think-aloud protocols (TAPs), the vocalised products of concurrent verbalisation sessions, while each composing two chapters of textbook content: their preliminary chapters and chapters they developed later during the project's lifecycle. By building this aspect into their research design, the authors intended to gather a manageable amount of data for transcription and analysis.

To encourage productive writing output and facilitate ease of data collection during ongoing textbook development, TWD and TWS opted to self-record concurrent verbalisation sessions. Although participant-recorded concurrent verbalisation has not been used as widely as the researcher-recorded variety, the technique is not without precedent. Atkinson (2013), for example, used participant-recorded concurrent verbalisation in her study of ELT textbook-writing expertise, and Berkenkotter (1983) collected this type of data when investigating a prolific author's writing procedures. While studying the summary-writing processes used by MBA (Master of Business Administration) students, Yang and Shi (2003) similarly requested that participants think aloud when writing on their own. Self-recording the TAPs enabled TWD and TWS to schedule writing sessions around other employment responsibilities, work on the textbook project at whatever time of the day or night best served their writing preferences and schedules, and track the development of individual chapters over several-day spans. Writing research generally preferences data collected in naturalistic settings, observed Hyland (2016, p. 121), and self-recording the TAPs allowed the authors to gather data in locations where they ordinarily worked on writing and other workplace projects—that is, their homes and offices—to encourage textbook progress.

While the authors were unable to identify any reports of open textbook development that incorporated concurrent verbalisation into their research designs, apart from Atkinson and Corbitt (2022), applied linguistics researchers have used the method to study various aspects of materials development, including exam-item writing (Salisbury, 2005), pedagogic task design (Johnson, 2003; Samuda, 2005), materials evaluation (Johnson et al., 2008; Kim, 2010), and commercial textbook production (Atkinson, 2013), and have valued its ability to document the specifics of participants' operations. Still, concurrent verbalisation has been criticised on several fronts. Baaijen and Galbraith (2018, p. 203), for instance, postulated that TAPs unsettle or draw participants' attention to standard writing procedures, and yet other researchers, including Yang, Zhang, and Parr (2020, p. 474), have detected negligible reactivity effects when using concurrent verbalisation, although the method has been found to increase time spent on tasks (Ericsson, 2018a, p. 196). Use of concurrent verbalisation also raises the issue of the observer's paradox, as is likewise the case with other data collection methods, since researchers seek to document participants' typical operations despite the presence of data-recording instruments. Gordon (2012, p. 304), however, disputed the negative effects of the observer's paradox on participants' self-recorded talk, finding that while participants in her study of family discourse sometimes paid attention to their voice recorders during data collection, they also vocalised openly during authentic interactions, such

1 Atkinson and Corbitt (2022) also discussed the data collection and analysis processes used in the research. The University of Montana's Institutional Review Board approved the research (IRB #102-19), and the data collected during the project are openly available in Figshare at https://doi.org/10.6084/m9.figshare.18131150.

as family arguments, lending credence to the idea that a recording device does not necessarily constrain the veridicality of data collection. Wilson and Dunn (2004, p. 499) also made the point that some thoughts are not immediately available for vocal expression, meaning participants cannot articulate the full extent of their cognitions during concurrent verbalisation sessions, but this factor should not diminish the value of what they are able to express aloud (Ericsson & Simon, 1980, p. 243), especially since TAPs can document details about mental operations that other methods may not capture (Hyland, 2016, p. 118; Johnson et al., 2008, p. 158) and reveal what authors do during writing episodes rather than what they think they do (Samuda, 2005, p. 235). Concurrent verbalisation, in short, affords overt access to typically covert writing operations (Johnson, 2003, p. 34), which is why TWD and TWS used the method in this study.

With methodological triangulation in mind, the authors also bookended TAP sessions with pre- and post-concurrent verbalisation interviews whenever possible to gather data about writing procedures, plans, and impressions. Triangulation can support the inclusion of various research perspectives, offset the drawbacks of data collection methods, and enhance a study's trustworthiness, according to Saldaña (2011, p. 76), and the authors took these aspects into account when formulating their research design. The disruption caused by COVID-19 and textbook project deadlines prevented them from conducting post-TAP interviews after finishing their second chapters, but this factor did not negatively impact the scale of their data sets: they each took part in two pre-concurrent verbalisation interviews, produced two TAPs recorded over several days, and participated in one post-concurrent verbalisation interview, resulting in a total of 897 double-spaced pages of transcribed data.

The data were analyzed using qualitative content analysis. Hence, TWD and TWS examined them during multiple readings and assigned codes based on emergent meaning units: words, phrases, and sentences that relayed meanings relative to open textbook development. The coding process proceeded in recursive sequences as the authors identified codes at both manifest (surface) and latent (underlying) levels of meaning (Vaismoradi & Snelgrove, 2019, 'Introduction'), and they made analytical jottings, as Saldaña (2016) and Miles, Huberman, and Saldaña (2020) recommended, to record their thoughts about coalescing analytical themes. They then met to discuss the overarching themes arising from the data and specific codes associated with those themes. Because of the expansiveness of the authors' data sets, they did not compare the codes they assigned to every page of data but discussed recurrent codes and outliers from selections of data to refine the codes and further define prominent themes. TWD and TWS used this same procedure on two separate occasions: after they had finished the first think-aloud protocols and associated pre- and post-concurrent verbalisation interviews and again after the textbook and data transcription were complete so that they could dedicate more time and attention to parsing the data. While reporting on his ELT materials-design research, Johnson (2002, p. 148) commented on the expansive and untamed nature of TAP data and the challenge of making sense of it all through the coding process. The current research project bore out the truth of Johnson's observation; nevertheless, the authors' persistence with data analysis revealed a number of salient themes. Herein, they focus on sourcing textbook material, designing chapters, and embedding hyperlinks as three pronounced complexities that emerged during data analysis.

## Sourcing materials for the textbook

Locating outside resources for inclusion in the textbook, to address or illustrate topics covered in its chapters, posed certain challenges. Project deadlines largely dissuaded TWD and TWS from seeking permission to use traditional copyrighted material in the open textbook, and this constraint, along with their design principle of sourcing content from publications with Creative Commons (CC) licenses[2], sometimes inspired extended exploration of existing open textbooks and other CC publications. As TWD thought aloud when constructing a chapter entitled 'Writing to Persuade,' she discussed the challenge of locating and selecting an example showing the point-by-point method of essay development, for instance:[3]

> *I had found (searching) some things (outside resources) before … I started on this chapter (planning) but then I realized (realizing) that some … weren't … spot on (relevance of content) … and adapting them (adapting sources) would've been a little bit challenging (discussing challenges). So … I was looking (searching) for some Creative Commons (OER) things (outside resources) … I could use (using what I can find) and … during my search (searching) … I went down the rabbit hole (staying focused) for about three hours (time management) … looking for this stuff (outside resources).*

While outside sources could streamline the incorporation of relevant examples and one-stop resources for supplementing lessons and addressing chapter objectives, the authors were keenly aware of their publishing deadline during textbook production and of observations regarding the amount of time coursebook projects can take (see, e.g., Swales, 1995b; Warriner & Morris, 2020). TWD's next comment during the same TAP session illustrated how she rationalised the time she spent reviewing candidate materials for the textbook:

> *I don't consider that a waste a time because … I wanna provide examples and … it goes back to our principles for development … our genre-based approach … but also … my approach when teaching … I tend to use … examples in class to show how things are done or to encourage students to analyze texts … to analyze the genres or the different approaches … but … I've noticed … sometimes it's quite difficult to find … examples … that are Creative Commons licensed…full examples.*

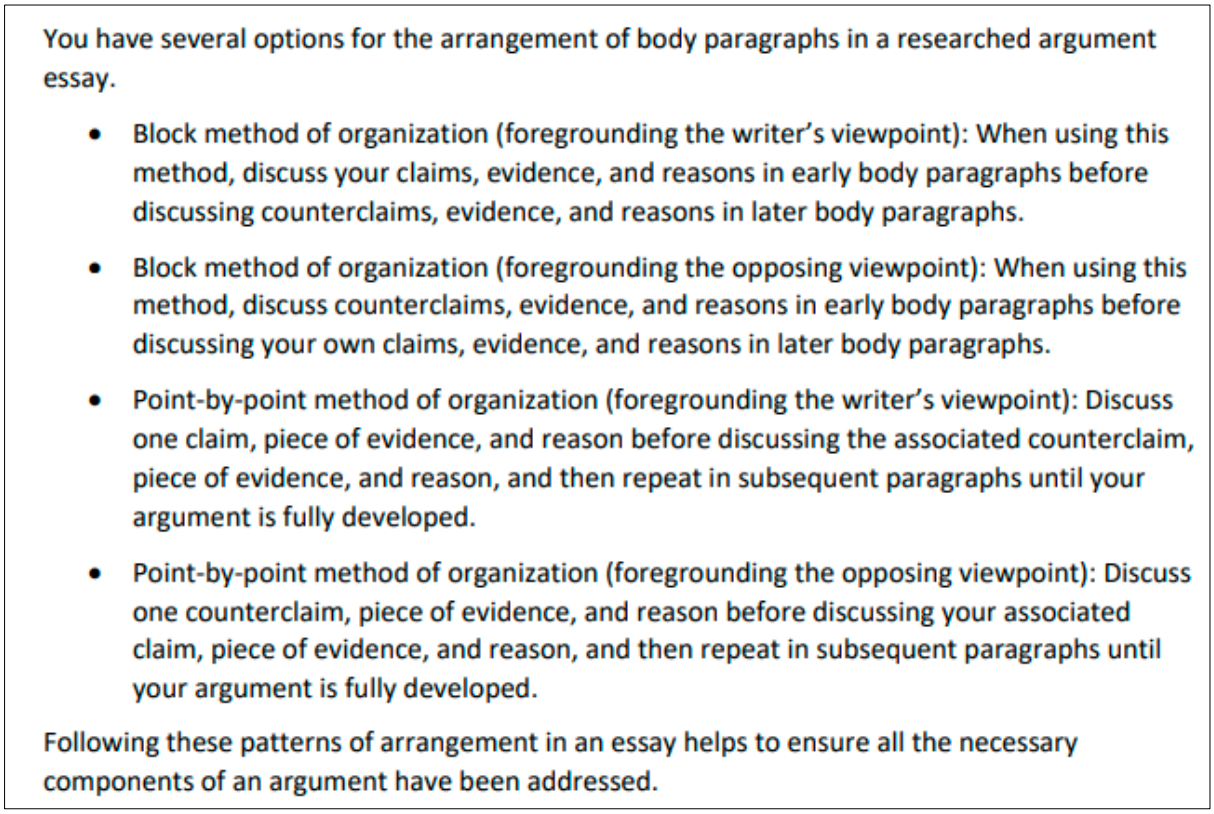
CC documents fulfilling specific criteria were not always available, as TWD mentioned, and some could not be easily or efficiently adapted for chapter inclusion. Time limitations eventually prompted TWD's decision to set aside the matter of providing a point-by-point essay example, and she thought aloud about two alternatives:

> *If I can provide … a skeleton outline of how the point by point structure can be developed … I'm not just leaving the students hanging … and then the instructors … can potentially gather samples … as they … use the book. Or find examples on their own. So that's my workaround … It really … does boil down to time.*

The screenshot in Figure 1, from page 659 of the open textbook (Atkinson & Corbitt, 2021), illustrates TWD's skeleton outline of the point-by-point essay structure.

2 Creative Commons licenses are the means by which copyright owners may make their original work available for adaptation and reuse by others (Creative Commons, n.d.).

3 Codes have been inserted into the first transcript excerpt presented in this paper to illustrate how the data were parsed (the codes are enclosed in parentheses to distinguish them from transcript content). These coding categories are defined in the Appendix, though a complete list of codes generated during analysis is beyond the scope of this paper given the considerable size of the data set and ongoing efforts to identify additional areas of analytic prominence in the data.


You have several options for the arrangement of body paragraphs in a researched argument essay.

- Block method of organization (foregrounding the writer's viewpoint): When using this method, discuss your claims, evidence, and reasons in early body paragraphs before discussing counterclaims, evidence, and reasons in later body paragraphs.
- Block method of organization (foregrounding the opposing viewpoint): When using this method, discuss counterclaims, evidence, and reasons in early body paragraphs before discussing your own claims, evidence, and reasons in later body paragraphs.
- Point-by-point method of organization (foregrounding the writer's viewpoint): Discuss one claim, piece of evidence, and reason before discussing the associated counterclaim, piece of evidence, and reason, and then repeat in subsequent paragraphs until your argument is fully developed.
- Point-by-point method of organization (foregrounding the opposing viewpoint): Discuss one counterclaim, piece of evidence, and reason before discussing your associated claim, piece of evidence, and reason, and then repeat in subsequent paragraphs until your argument is fully developed.

Following these patterns of arrangement in an essay helps to ensure all the necessary components of an argument have been addressed.

**Figure 1.** *TWD's explanation of the point-by-point essay structure*

Like TWD, TWS also addressed the challenge of sourcing supplemental materials for the textbook. After constructing a chapter on 'Integrating Graphic Elements,' TWS discussed her approach to resolving difficulties with locating source materials in an interview:

> *I get the sense … I'm missing some … repositories or I haven't come across some of the places yet that I might be able to find information … It is … a very time consuming process so there have been times … where I've set aside the time to just look for those things … in the hopes that I'm going to find something that lines up with everything I need … That hasn't actually happened … but … I haven't completely failed to find something that I can use and … want to use.*

TWS also noted her self-imposed boundaries, which included limiting the length of search time she would commit to identifying and selecting OER sources:

> *I stopped myself a few times when I wasn't sure how I wanted to integrate the material or when … I don't think it's a good use of my time to spend it looking for this … outside source that is going to help me develop this … I … made rules for myself … in that regard.*

Ultimately, TWS imposed the boundary of relying on her teaching experience when determining what materials to include in the chapter: 'I worked it out according to … how I like to teach that subject,' she explained during the interview. Although time limitations and gaps in existing CC offerings presented challenges for the authors, they were not insurmountable. Pedagogical reasoning skills (Richards, 2010, p. x), the sophisticated thinking that enables teachers to assess the functionality of educational materials and their capacity for addressing course objectives, helped them navigate the complexities in order to produce their chapters.

A perceived dearth of open-source examples along with a preference for familiar materials occasionally led TWS to request permission to reproduce and cite work from traditionally copyrighted publications in the OER textbook. When writing the 'Integrating Graphic Elements' chapter, for instance, TWS decided to seek approval to include a specific illustration from a commercial text in its fourth edition,

an undertaking she thought might prove challenging, because she had been using the illustration in her classroom lessons for several years and valued its comprehensible presentation of information. Swales (2009) likewise emphasised the importance of incorporating clear material into textbooks, as did the learners in Jou's (2017) study.
TWS discussed the rationale for her decision in a pre-concurrent verbalisation interview:

> *There are a couple of things … I've used in … classes … that I really like in terms of illustrating points and I don't think … it's a matter of not finding anything that's quite that good but more familiarity for me … It's just wanting to use things … I like and probably resisting looking for something to replace it with right now.*

TWS later emailed the commercial text's author about using the illustration and received an affirmative reply within a matter of hours, allowing her to reproduce privately owned content, with attribution, in a CC-licensed book. As a result of her prolonged hesitation about the source—and the additional stress she endured during that self-acknowledged period of inaction—TWS sought permission from the owners of traditionally copyrighted sources more readily when she had a strong preference for particular materials as pedagogical artefacts. She thus called upon her teaching experience to inform her textbook development practices—evidencing transfer between domains of operation (see also Atkinson, 2021a; Salisbury, 2005)—and she refined her own sourcing practices during the project to minimise stressors and make progress toward textbook completion.

## Formatting consistently without a net

A team of editors and page designers undertake various tasks during a commercial textbook project, but the open textbook model reassigns this work, either wholly or in part, to authors (Wang & Wang, 2017; West, 2019). When writing their open textbook, TWD and TWS did not have any prescribed parameters, apart from a publication deadline and the need to include open-source material to facilitate Creative Commons licensing, and this freedom complicated textbook development. They were unfamiliar with the textbook's publishing platform and were directed to send their completed chapters to the publisher in Microsoft Word format. Since there was no required style guide, design conventions, or length restrictions, and the authors did not know what the publishing platform would accommodate, they proceeded as they ordinarily would when creating lesson materials but did not devise a uniform layout prior to starting on chapters. This situation reflected the inexperience of novice textbook writers, as well as general uncertainties surrounding open-source publishing platforms (West, 2019), and both participants discussed its challenges during data collection. TWD was anxious to proceed with content creation to meet the project deadline, as she mentioned during a pre-concurrent verbalisation interview, so she used basic formatting effects (e.g., bold headings) and applied consistency to chapter designs but did not use style sheets:

> *I've … been trying to apply … the overall principle of consistency to the design of the chapters so … keeping the spacing consistent keeping the overall look consistent and … trying to use the same … color scheme so there's overall consistency there … If I incorporate … figures or outside sources … I do the same … thing … applying consistency … so that … everything looks similar.*

TWD recognised that an inviting chapter design could enhance textbook approachability and usability, as did one of the coursebook writers in Atkinson's (2021b) study, and her effort to maintain consistent formatting within and among chapters proved to be complete, although it did consume considerable time during writing episodes. For her part, TWS applied a rudimentary chapter design, with Microsoft Word headings and body text styles, to maintain a consistent format and curb her desire to pre-plan ex-

tensively, and she discussed this approach during a pre-concurrent verbalisation interview:

> *I created … styles so that my headings and my subheadings and my titles … are consistent and so maintaining consistency with spacing and all of that. That's something … I can really get lost in the weeds in if I'm working on a … document and trying to finalize it. So by setting … those parameters ahead of time I hope that it helps me … maintain … consistency both in terms of the … types of information the amounts of information … within a chapter … and it'll also help me … maybe get past that block … I … have … developed of saying I'm not done yet … So I … have thought about it and developed a little bit of design element.*

Figure 2, extracted from page 127 of the open textbook (Atkinson & Corbitt, 2021), illustrates TWS's formatting approach as applied to her 'Designing Documents' chapter.

**Chapter Overview**

Apicius, a Roman foodie of the first century, said "We eat first with our eyes." Information, not unlike food, must appeal visually to a reader immediately if it is to have a fighting chance of being understood and used. Readers decide whether to "consume" documents in a similar way to how people decide whether to consume a meal. Eating documents first with the eyes means readers rely on a document's formatting as a means of indicating readability. Therefore, it is critical that writers use the available tools discussed in this chapter to optimize readability: if the document is not appetizing at first glance, readers may ignore or avoid it altogether.

In similar ways as illustration is a powerful visual tool for technical writers, attending to the graphic or visual design of documents critically affects an audience's ability to understand and use those documents. Keep in mind that technical documents must be clear, complete, concise, and correct in order to succeed in their purpose. The audience and purpose must be a writer's primary considerations in making design decisions.

The explanations, examples, and exercises in this chapter aim to help students learn how to use principles known to appeal to human visual perception through development of these skills:

- To make decisions about document design according to the SCRAP design principles
- To use page design features deliberately with the purpose and readers' needs in mind
- To be mindful of reasons to use and change fonts (including sizes and styles)
- To practice using titles and headings in most academic and professional writing

**What are the SCRAP design principles?**

Typical lessons about document design principles include most of the same principles, presented in some variation on the SCRAP* acronym used in this chapter. For purposes of this fundamentals and introductory technical writing text, the following principles are explored:

- **S**ize — The size of an element on a page indicates importance of the element
- **C**ontrast — Use color and high variations in shade to draw the reader's attention
- **R**epetition — Pattern consistency among headings/other elements shows relationships
- **A**lignment — Consistently lined up items on a page connect in a reader's mind
- **P**roximity — Readers see elements placed close together as being related in meaning

**Figure 2.** *TWS endeavored to create a consistent page design*

The open textbook was a large, complex, co-written text, and TWS decided to change her planning process and abandon her pursuit of perfection (see Swales, 1995a, p. 135) to make progress on its completion. Although her standard composing procedures afforded her comfort as a novice textbook writer, time constraints necessitated an overhaul of her typical process, and she demonstrated flexibility when responding to the challenge. Like TW2, one of the expert ELT textbook writers in Atkinson's (2021b) study, TWD and TWS found ways to proceed with the work of chapter development when confronted with time pressures, specifically by standardising their chapter designs; however, unlike TW2 whose project involved input from editors and page designers (see also Bell & Gower, 2011), the authors were obliged to establish their own mechanisms to proceed with chapter construction.

## Embedding hyperlinks

Although TWD and TWS endeavoured to integrate CC-licensed material into the textbook, they also wanted students to access web-based examples and supplemental content that could not be fitted into the book's chapters because of permission constraints; during data collection, they subsequently discussed the need to embed hyperlinks into the chapters. Their textbook design principles specified that hyperlinks should be used sparingly and when no alternative was available, in large part due to the experience they both had—as TWD put it during one of her writing sessions—with 'URL addresses … go[ing] out of date or links … be[ing] broken.' They also anticipated that students and others who chose to print the textbook (or portions of it) for use in classes would be best served if the link-based content was minimal. However, they weighed the inclusion of hyperlinks carefully, as TWS articulated during a pre-concurrent verbalisation interview:

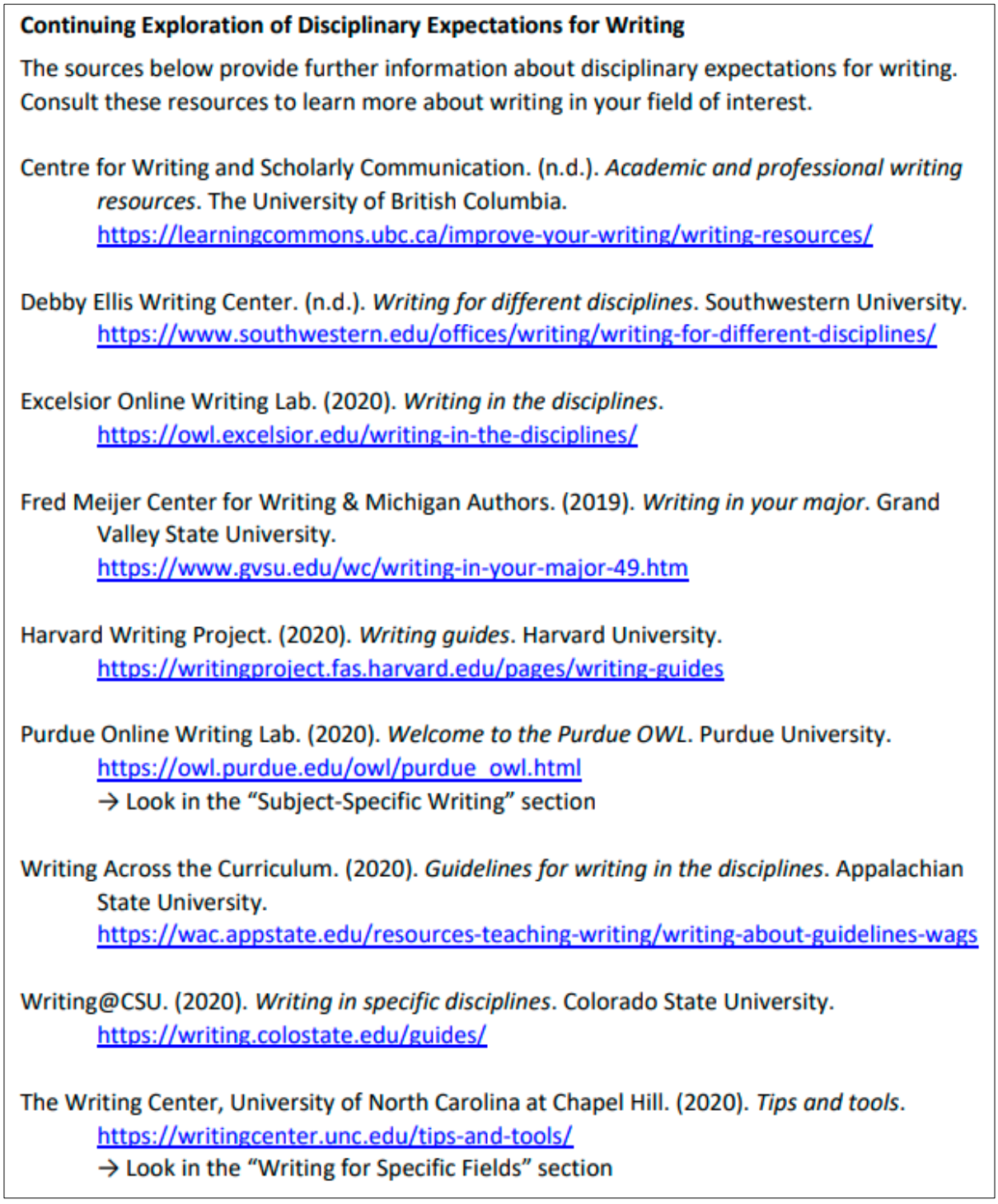
> *If a student is … learning from this chapter it's necessary … they have access … to the electronic copy of the document so … they can use the live links … And if they don't or if they're relying on a printed copy … the link needs to be … spelled out … and so providing the … full URL so it could be typed in from … Reviewing a printed copy is something that's occurred to me…I don't often use the … URL in my worksheets and things because it's … easy to create a … different piece of text for a link but that's something I'll avoid and have been avoiding in this process so that students can access by just copying … and manually typing those URLs in.*

Although the authors sometimes chose to provide links to supplemental documents and websites so students could utilise the skills stressed in textbook chapters, as TWS indicated, they also navigated situations in which the inclusion of web resources, regardless of their publication license types, meant that access through in-text hyperlinks simply could not be avoided. During concurrent verbalisation, TWD explained her decision and rationale for linking to outside sources in one instance:

> *I … found … an interesting compilation of sites that address … writing in the disciplines … There are some folks out there who've done a lot of work in this area and have … compiled sources that … are accessible to … first year students … Some of them are Creative Commons and some aren't so I had to just put links into the chapter … I basically said 'consult the sources to learn more about writing in your field of interest.'* [4]

4 The quotation marks in the transcript extract signify the author is reading aloud textbook content she has already written or is vocally articulating textbook language while typing it.

Figure 3 offers a view of textbook page 411 (Atkinson & Corbitt, 2021), which TWD referred to during her concurrent verbalisation session.



**Continuing Exploration of Disciplinary Expectations for Writing**

The sources below provide further information about disciplinary expectations for writing. Consult these resources to learn more about writing in your field of interest.

Centre for Writing and Scholarly Communication. (n.d.). *Academic and professional writing resources*. The University of British Columbia.
https://learningcommons.ubc.ca/improve-your-writing/writing-resources/

Debby Ellis Writing Center. (n.d.). *Writing for different disciplines*. Southwestern University.
https://www.southwestern.edu/offices/writing/writing-for-different-disciplines/

Excelsior Online Writing Lab. (2020). *Writing in the disciplines*.
https://owl.excelsior.edu/writing-in-the-disciplines/

Fred Meijer Center for Writing & Michigan Authors. (2019). *Writing in your major*. Grand Valley State University.
https://www.gvsu.edu/wc/writing-in-your-major-49.htm

Harvard Writing Project. (2020). *Writing guides*. Harvard University.
https://writingproject.fas.harvard.edu/pages/writing-guides

Purdue Online Writing Lab. (2020). *Welcome to the Purdue OWL*. Purdue University.
https://owl.purdue.edu/owl/purdue_owl.html
→ Look in the "Subject-Specific Writing" section

Writing Across the Curriculum. (2020). *Guidelines for writing in the disciplines*. Appalachian State University.
https://wac.appstate.edu/resources-teaching-writing/writing-about-guidelines-wags

Writing@CSU. (2020). *Writing in specific disciplines*. Colorado State University.
https://writing.colostate.edu/guides/

The Writing Center, University of North Carolina at Chapel Hill. (2020). *Tips and tools*.
https://writingcenter.unc.edu/tips-and-tools/
→ Look in the "Writing for Specific Fields" section

**Figure 3.** *TWD inserted hyperlinks into the textbook as necessary*

The transcript extracts provided here bear out Atkinson's (2021b, 2022) observations about the complex nature of textbook production and illustrate how TWS and TWD pondered the challenges of their project, experimented with possible solutions, and discovered paths to successful outcomes. The design principles the authors developed while planning the coursebook, which prioritised learners' needs,

proved to be invaluable as a foundation for making decisions about the inclusion and presentation of content: they offered parameters to be negotiated in light of those complexities that emerged during writing sessions. Ultimately, the authors' efforts culminated in the composition of a dedicated corequisite writing textbook, a pedagogical product valuable to corequisite implementation (Daugherty et al., 2018, p. 11).

## Drawing conclusions and identifying implications for OER development

By investigating textbook production as it unfolded, TWD and TWS learned much that might be instructive to others wishing to embark on open textbook projects; herein, they addressed some of the complications that accompanied open coursebook production by focusing specifically on their efforts to locate source materials, format chapters, and weigh the inclusion of hyperlinks. In the absence of an existing body of research focused on the particulars of open textbook authorship, this paper represents an initial effort to chart the complexities associated with the endeavour and exposes practical details that aspiring open textbook writers may find useful. Throughout the open textbook project, the novice authors showed persistence in the face of challenges, including time pressures, and a steadfast determination to craft a quality product for a particular pedagogic need. The detail captured in their data sets substantiated observations about the complexity of textbook design work made by Atkinson (2021b, 2022) and Harwood (2010, 2017), but it also supported Bereiter and Scardamalia's (1993) contention that movements toward expertise can be found in individuals' responses to tasks. Pedagogical reasoning skills (Richards, 2010, p. x) permeated the authors' writing episodes as they continually considered textbook content relative to its use in corequisite classroom contexts and dedicated substantial care to its construction. Though some readers may feel that the findings reported here focus too heavily on the pragmatic aspects of open textbook production, the authors reply that it is for good reason since the practicalities of materials development projects often interest teachers who are curious about their hands-on relevance.

Gaps in product offerings may inspire open textbook production and motivate the creation of bespoke textbook content to address particular audiences, course outcomes, and teaching contexts, as this study illustrated (see also Atkinson & Corbitt, 2022). Indeed, the authors featured in this investigation combined externally sourced content with their own custom-built material to create a coursebook for a specialised corequisite focus. Because open textbook authors shoulder the responsibility for conceptualising, creating, editing, and designing textbook material, their projects may resist the uniformity of content observed within some commercial textbook offerings (for discussions of textbook sameness and its roots, see Benkler, 2005; Gray, 2002; Maley & Kiss, 2018; Sternberg, 2017).

Open textbook production and accompanying research projects provide fertile opportunities for professional development—a point that is similarly mentioned in regard to commercial materials design (see, e.g., Popovici & Bolitho, 2003)—as instructors find ways to source, adapt, and customise materials licensed in the Creative Commons. By researching open textbooks as they unfold, materials developers can identify their incumbent challenges and productive ways of managing the complexities that may, in turn, support other authors' work. Harwood (2021) has similarly welcomed teachers' exploration of their own materials as a means of professional development. In terms of book production, the open textbook model provides faculty authors with an avenue for tailoring textbooks to their particular courses rather than the reverse, as may happen with commercial texts (Morris-Babb & Henderson, 2012, p. 151). Those

who feel anxious about embarking on large-scale open textbook projects might gain experience working with open-source materials by adapting and supplementing existing resources for particular teaching contexts, subject to the terms of their Creative Commons licenses, and then rereleasing the products back into the CC-sphere for other instructors to adopt and adapt—an approach that would contribute to those repositories of open materials already in existence. Trainee or practicing teachers might also be asked to evaluate existing CC materials and suggest ways of tailoring them for particular teaching contexts to gain familiarity and comfort in working with the resources. Similar to the variously experienced English language teachers who participated in Johnson et al.'s (2008) study, they might also think aloud during evaluation sessions to become acquainted with concurrent verbalisation, which might spark their interest in the research field of materials development and inspire use of TAPs in other textbook studies—as yet, an underused approach in materials research (Harwood, 2017, p. 272). Students can also take part in open textbook development by editing and modifying CC textbooks and contributing text samples to retrofit existing books. As Atkinson and Corbitt (2022) indicated, the open textbook model provides opportunities for teachers and learners to participate in the spectrum of activities included within Tomlinson's (2012) definition of materials development and enhance their skill sets in the process. It thus offers a means to unite the practical and empirical branches of materials development, as Harwood (2010), Mishan (2021), and Swan (2018) encouraged, and infuse professionalism into the materials field, a cause championed by Feak and Swales (2014).

Concerns about open textbook quality (see, e.g., Hilton, 2016; Hilton, Larsen, Wiley, & Fischer, 2019; Jung et al., 2017; Ozdemir & Hendricks, 2017; Petrides et al., 2011) may overshadow the considerable work authors dedicate to producing open textbook content; however, an investigation such as this one that tracked the real-time development of open textbook chapters goes some way in addressing the perceived quality issue. The current study anatomised writing episodes to expose the decisions that inspired open textbook construction, an approach that yielded insight into chapter formations and revealed that open textbook pages are dynamic content: thoughtfully conceived teaching artifacts built with time, care, and effort. TWD and TWS's reflexivity regarding their teaching practices influenced textbook construction, as the transcript excerpts provided in this paper illustrate; thus, the materials project bore out Finlayson's (2020, p. 246) observation about the benefit of open textbook development for educators.

By inhabiting the space between textbook production as a practical undertaking and locus for empirical investigation, this study also has implications for the research field of materials development: specifically, in terms of how two novice textbook authors conceptualised their open textbook for use as a pedagogical artefact. Much of the complexity embedded in materials design work resides in the balance authors must achieve between communicating their ideas to materials users and conceiving of how they may be operationalised in a classroom setting (Samuda, 2015, p. 278). The data extracts included herein confirm the veracity of this point and illustrate that although the participants had no textbook-writing experience before embarking on their project, this factor did not constrain their writing efforts; instead, TWD and TWS called upon knowledge and skills gained through teaching experience to inform their work on the open textbook—a case of transfer between domains of operation. Documenting the authors' actions and thoughts during writing episodes revealed the scope of their considerations, both proximate to the book's design and synoptic in terms of how that design would translate into usability. Hence, their conceptualisation of the book as an effective learning and teaching tool was grounded in their schematisation of its chapters and pages, and the insight gained from their detailed data sets helped to disentangle this intricacy. Rather than perpetuating the conception of materials development as a straightforward activity that all teachers can manage by virtue of their career choice (see Samuda, 2005, p. 236), this study instead illustrates that educators can indeed undertake open textbook production and usefully

contribute to the existing body of OERs by carefully considering how one aspect of textbook design impacts another and by envisioning open textbooks as living pedagogical tools, visible representations of reflexive approaches to teaching.

## Recognizing limitations and directions for further research

To collect data coincident with writing episodes that sometimes spanned locations, hours, and days, this paper's authors self-recorded their own TAP sessions; they also conducted pre- and post-concurrent verbalisation interviews in the interest of methodological triangulation. Although these approaches could be construed as limitations of the study, given the authors' proximity to the open textbook, data collection, and data analysis, the challenge with investigating composing practices over the course of an extended writing project such as a coursebook is to formulate a research design that is viable, aligns with research objectives, and does not stall textbook progression or completion. Atkinson's (2013) study of ELT textbook-writing expertise and Berkenkotter's (1983) exploration of a prolific author's planning strategies both successfully employed participant-recorded concurrent verbalisation to document writing processes and behaviours over protracted time periods, and they consequently informed the current study's design. Use of self-recorded TAPs and accompanying interviews in this investigation did result in a substantial body of detailed data, as discussed herein, although the authors acknowledge that other research techniques, such as reflective diaries, might have supplemented the data and resulted in differing views of textbook production. Future investigations of open textbook development might also configure alternate means of data collection to document the specifics of lengthy writing sessions as they unfold.

Data gathered for the present investigation revealed a range of complexities that can impact open textbook production, certainly more than can be discussed in one paper. Atkinson (2021b) made a similar observation when researching ELT textbook development. Although the narrow scope of results addressed here may be perceived as a limitation, the amount of concurrent verbalisation data collected during the open textbook project necessitated selectivity in the presentation of findings. Johnson (2002), too, remarked on the method's capacity to gather sizeable data sets rich in detail. The limited scope of this study speaks to the need for further empirical investigation of open textbook authors' operations, which may contribute multiple layers of understanding to the sparsely studied area of OER development.

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# Appendix

## Code definitions

The following codes were applied to the first transcript extract presented in this paper. For ease of reference, the coding categories have been alphabetised herein.

- Adapting sources = Make changes to existing resources.
- Discussing challenges = Anticipate challenges; encounter challenges; express concern.
- OER = An open educational resource; a resource or platform that is Creative Commons licensed.
- Outside resources = External sources.
- Planning = Planning sequence; planning approach; pre-planning; skeleton plan.
- Relevance of content = Instantiate chapter/section focus; address genre for deliverable; discuss what skills are required to produce a deliverable or complete an activity or assignment; assess content as helpful; present an example.
- Realising = Have a realisation about something.
- Searching = Look for or locate resources.
- Staying focused = Encounter interruptions; disengage from the writing; take a side trip (digress); go down a rabbit hole (pursue a distraction); procrastinate.
- Time management = Writing schedule; internal deadlines; external deadlines; pre-set time limits; write during a certain period of time; rush; save time for something; chunk of time; efficiency/ productivity.
- Using what I can find = Use a resource once it has been located.

When applied to the first data excerpt in this paper, the codes address TWD's efforts to source outside materials for use in the open textbook.