

CREATING AN OER EBOOK ON TEACHING EARLY LITERACY: A DESIGN CASE

Nandita Gurjar, *Rhode Island College*

In this design case, I discuss the design and development of an open educational resource textbook on teaching methods of early literacy, primarily geared toward preservice teachers in Iowa. This design case intends to provide an interdisciplinary example of an accessible, multimodal, interactive, contextually relevant, and culturally inclusive open-access eBook on early literacy for effective teacher preparation.

Nandita Gurjar is an Assistant Professor of Elementary Education at Rhode Island College. Her research interests are culturally inclusive instructional design, online learning, networked learning, and ethical implications of emerging technologies on teaching and learning.

THE CONTEXT

As the science of reading gains traction to enhance the reading proficiency in K-5 schools, educators have become aware of their specific contextual needs to address the gap in reading achievement through effective literacy preservice teacher preparation. According to the Nation's Report Card (National Center for Education Statistics, 2022), reading proficiency scores have declined from previous years. Children's lack of reading proficiency by the 4th grade impacts their academic achievement in content areas. Preparing preservice teachers equipped with the knowledge, skills, and dispositions to be innovative, creative, collaborative future educators is crucial for children's literacy development. One of the ways we can address literacy preservice teacher preparation is through the creation of high-quality, comprehensive, and contextualized open-source materials that are accessible, engaging, inclusive, and easy to use for anytime, anyplace microlearning at their own pace. This work advances the field by illustrating designing an early literacy eBook within the paradigms of authenticity, care, and cultural inclusivity from an interdisciplinary teacher education perspective. It also demonstrates the impact of positionality and value-based system in the design of a learning experience.

The affordances of information technology enable cross-pollination of innovative ideas and pedagogical practices across the globe. Open-sourced materials facilitate the democratization of knowledge where learners can access training materials globally and adapt them to their local context. My co-authors and I were interested in creating an OER eBook to address effective teacher preparation by leveraging information technologies to connect people, ideas, and places through open education. Training teacher candidates with open educational resources can cultivate a disposition of sharing and openness. In addition, it provides opportunities for gaining valuable digital literacy skills such as creating, composing, and evaluating information in digital spaces when instructors design relevant learning experiences to leverage open education. Creating an open-sourced eBook allowed us to accomplish our goals of democratizing knowledge while developing necessary skills, dispositions, and literacies associated with the use of OERS. We aimed to



A publication of the Association for Educational Communications & Technology (AECT), published by Indiana University Libraries Journals.

Copyright © 2025 by the International Journal of Designs for Learning, a publication of the Association of Educational Communications and Technology. (AECT). Permission to make digital or hard copies of portions of this work for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page in print or the first screen in digital media. Copyrights for components of this work owned by others than IJDL or AECT must be honored. Abstracting with credit is permitted.

<https://doi.org/10.14434/ijdl.v16i1.38647>

empower the digital learning (Ma, 2021) of our learners by creating this open textbook.

Regarding the content, the need for this open-sourced eBook came about because of a lack of a comprehensive text on early literacy that addressed the local and contextual needs while also addressing the larger goal of developing the essential skills in digital, critical, cultural, and home literacies. Also, the textbooks that we had been using in our respective universities did not address the needs of a beginner's literacy course in providing a strong, broad foundation. They lacked interdisciplinary connections, digital literacy, and critical literacy topics. Discussion of home literacies of culturally diverse families was also lacking in our current texts. Further, elements of diversity and inclusion were missing from the textbooks in terms of discussion of dyslexia, trauma-informed instruction, dual language learners, and selection of multicultural literature within a responsive classroom. By creating this open-sourced eBook, we also addressed Iowa's specific need to incorporate science of reading and discussion of dyslexia in early literacy methods' courses while providing a broad overview and multiple perspectives on literacy as a meaning-making experience.

In addition, we wanted to create a learner experience (LX) that differed from the experience of owning a static textbook with interactivity, multimodality, ease of navigation, and inclusivity to empathize and care for our learners. We hoped these elements would address diverse learner needs in accessing and comprehending information in chunks and in multiple formats.

We were driven by the need to have a digital, open access resource that can be revised and kept updated with the changing times, not only by the authors but also by others who wish to remix or revise, thereby leveraging the collective pool of distributed expertise and innovative ideas. My co-authors and I wanted to move away from using scripted curricula to open-sourced eBook that instructors could use to design creative and engaging learning experiences and innovative assignments best suited to their local contexts. We hoped that the use of this open access eBook format would foster OER-enabled pedagogy (Wiley & Hilton, 2018), where other educators could contribute supplementary materials and renewable assignments to share widely. We were motivated that our inter-university collaboration would positively impact preservice teachers by providing access to free materials. It would also support "pedagogic variety" (Weller, 2020, p.80) by leveraging our distributed expertise situated in our unique backgrounds and lived experiences.

The development of our eBook was timely as university students were increasingly susceptible to disengagement, lack of motivation, and financial crises during and after the COVID-19 pandemic. They needed something to sustain their interest and attention while easing their financial

burden. Shortly after COVID-19, there was a greater need to mitigate financial barriers in accessing course materials on time. We hoped that the free nature of the text would be able to alleviate students' financial distress, especially after a major global pandemic. Additionally, the accessible nature of the digital text would also provide an at-your-fingertips, anywhere, anytime learning resource for a diverse group of learners with varying needs and abilities. Further, it would cultivate the disposition to leverage in-the-moment anytime, bite-sized learning for learners who may be juggling multiple responsibilities. Since this free resource could also be accessed on mobile devices, it presented a convenient reference source where personalized learning could occur without having to spend money on buying books or returning books to the library. It presented a convenient way to access course texts when social contact was limited during the pandemic. An interactive, multimodal resource would also support student comprehension by breaking up the text into small segments with strategic interactive quizzes, reflection questions, and multimedia, thereby addressing diverse cognitive, socio-emotional, and personal contextual needs.

Our decision to create a textbook over other online formats, such as ancillary materials, Google website, or class blog, was driven by the following reasons: First, we wanted to house our comprehensive content of the course on a single platform (Pressbooks) with multimodal affordances and H5P interactivity to reduce the cognitive load. Trust et al. (2023) note that familiarity with the textbook format lends itself to better acceptance by the students due to ease of navigation, thereby reducing students' cognitive load. Second, my co-authors and I wanted to create an eBook that can be kept updated to include recent developments in literacy to adapt, revise, or remix based on contextualized needs. Third, eBook allows for enhanced engagement through H5P interactive content and multimodality. Finally, eBook format reinforces inclusivity through accessible content. Therefore, when an opportunity presented itself through a grant, we took on the challenge of creating an open-access book on early literacy. Next, we present the positionality of the authors as it determines the value-based decision-making.

OUR POSITIONALITY

The positionality of the eBook authors is important to consider as it influences the values embedded in the design. The second author and I were first women of Southeast Asian descent from South Korean and Indian heritage, respectively. We came to the United States as immigrants, international students to pursue our graduate degrees. Being immigrants, creating a sense of belonging, care, and cultural inclusivity was important for us. The third author of the eBook was Caucasian from the Midwest who worked extensively in community outreach and family engagement to promote reading to diverse populations and had deep contextual

knowledge of Iowa. Hence, our eBook was informed by diverse perspectives and life experiences. However, our values of care and inclusivity were in alignment in terms of the Learner eXperience (LX) we wanted to create by designing this eBook.

OUR VALUE DRIVEN DESIGN

Abramenka-Lachheb et al. (2025) posited that “designers’ philosophies, values, and design judgement play a significant role in design practice, and they are the driving force behind the enactment of frameworks and philosophical stances” (p. 2). They recommend that when designers become critically aware of their values, they can evoke and manifest successful design judgments. Value sensitive design (Friedman et al., 2013) systematically incorporates human values throughout the design process, prioritizing ethically significant values, such as human welfare, ownership, freedom from bias, universal usability, trust, autonomy, identity, and so on.

We incorporated the values of care and social justice in our human-centered design process. Our values of care and social justice are manifested in our design decisions in ensuring the ease of navigation, reduced cognitive load, multimodality and interactivity, accessibility, and cultural inclusivity, where everyone feels a sense of belonging, care, and empathy toward one another. We also worked toward ensuring a balanced perspective that is free from bias by presenting both the science of reading and the whole language approach to literacy that is rich with meaningful, diverse literature. We wanted our learners to have autonomy of anywhere-anytime access and ownership of educational content without financial barriers. Autonomy, access, and ownership play a role in promoting human welfare by mitigating barriers to equitable quality education. We do recognize that digital inequity and technological barriers in terms of access to devices and Broadband connection would impact equitable educational access. However, we hoped to mitigate barriers that were within our control. Our values became the driving force behind creating this open-access eBook on early literacy.

THE EXPERIENCE OF THE DESIGN

As teacher educators, we grew professionally by being engaged in the experience of the design. We became resourceful and flexible as we problem-solved unanticipated issues and situations beyond our control. We developed pedagogic variety through discussions and sharing of lived experiences. We shared our pedagogical practices, approaches, and methods that worked in our classroom contexts, teaching early literacy. Each co-author tapped into their strengths and areas of passion as we

designed this open-access book. We all believed passionately in cultivating a joy of reading in children and applied an interdisciplinary approach to literacy. Our work was informed by our individual strengths, such as cultural inclusivity and technology integration in literacy for me, multicultural children’s literature and music in literacy instruction for the second co-author, and guardians as partners in literacy and school-community partnership for the third co-author.

Through this experience of design, we learned valuable skills in coordination, collaboration, cognitive flexibility, and critical and creative thinking. We approached setbacks as a necessary path to success. We learned to have patience and grace with ourselves and others. We learned to play with technical issues and provided support to one another as a team. Lastly, we tapped into our creativity and imagination to design an eBook that we hope preservice teachers will find relevant and easy to use.

DESIGN PRINCIPLES

We were intentional in choosing relevant design principles as we created this open-source digital resource on early literacy. We considered the following design principles in our writing.

Design Principle 1: Writing for the Web

We aimed to create a learner experience with the ease of navigation and a focused reading experience in chunks that the reader can revisit to continue reading anytime, anywhere. Therefore, we structured our content with headings and subheadings to guide the reader; we used bullet points and white spaces to relieve eye strain to make the content easy to read. We chose bold or italics where needed to emphasize key ideas or points, and a variety of styles in text boxes to present concepts, learning objectives, and key

Writing strategies for children

- Choose and narrow the topic. (What?)
- Set a purpose. (Why?)
- Consider the audience. (For whom?)
- Decide on the genre. (How?)
- Generate and organize ideas.
- Re-read, revise, elaborate, question, self-monitor, self-evaluate, share, and get peer feedback.
- Edit, proofread, format, and publish.

Things that strategic writers do:

- They make deliberate choices based on their purpose.
- They engage in self-regulation strategies such as self-monitoring and self-evaluating.
- They are willing to take feedback from peers and adults.
- Initially, they focus on developing the content, postponing looking for errors until towards the end.

FIGURE 1. An example of writing for the web with headings, bullet points, and a text box.

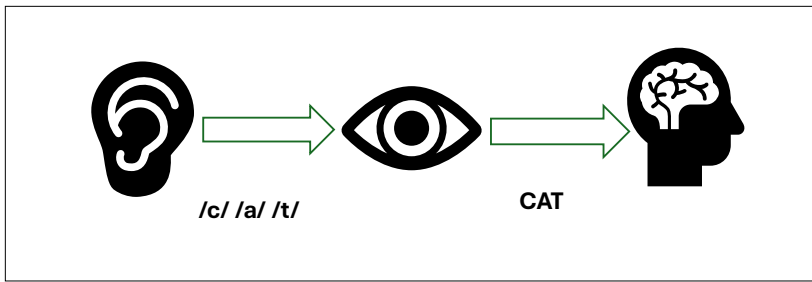


FIGURE 2. An example of multimedia principle: Using text with images to illustrate a concept.

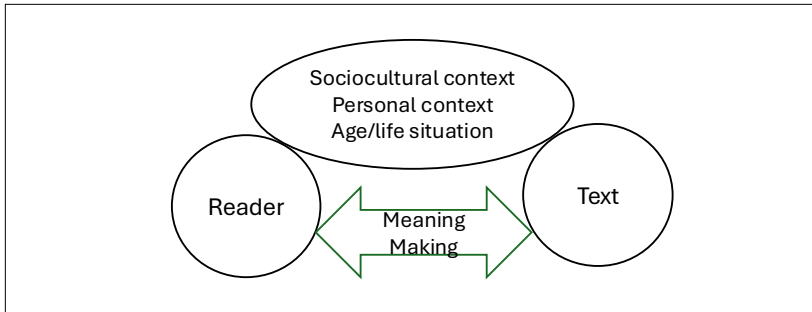


FIGURE 3. An example of coherence principle to demonstrate how meaning-making occurs using a simple diagram.

How to provide support

First, if you have documented that a student has trouble in the areas listed above, talk with your schools' Special Education staff about a referral.

However, you can support the student in your classroom. The first thing you can do is to develop a positive, supportive relationship with the student. A review of close to 150 studies on motivation found that to help children succeed, you must help them feel 3 things:

- **Competent:** A feeling of competence doesn't mean that students already know how to do something, but that they have the confidence that they're capable of learning it. Starting off a reading lesson with something the students already know can build the feeling of competence. Then go to something that might be harder and encourage them to try it.
- **Belonging:** This is feeling accepted and connected to others. Listen to a student's thoughts and feelings and respond with empathy: "Yes, learning new things can be hard. I know what that feels like." Help the student build the identities of a learner and a reader.
- **Autonomy:** This is about choices and deciding for yourself what you want to do. Even little choices make a difference. Let the student pick their own books and personalize their assignments. Explain the rules and requirements of lessons so that the students can understand why they're being asked to do them.

FIGURE 4. An example showing signaling principle by emphasizing key information in bold text and personalization principle to talk directly with the audience.

takeaways. We used simple, clear, and concise language to remove any readability barriers. We either avoided using the acronyms or explained the acronyms that may pose barriers in understanding for a culturally diverse audience. We hyperlinked outside resources for learners to explore concepts further at their own time.

We utilized Trust's (2019) "made to stick" guiding principles in our work. Trust noted these guiding principles as SUCCESS in

writing for the web: Simple, unexpected (surprise), concrete (relevant), credible (current, accurate, and reliable information), emotion, and story. We applied simple, concrete, credible, and story. As this book was geared toward students early in their program, we kept the content and the language simple and easy to comprehend. We connected the content to readers' lives to make it relevant and concrete. We made personal connections in the form of a story to engage the reader's emotions and used storytelling to connect with the audience throughout the book. Figure 1 showcases simple language, concrete (relevant) content, and credible information (current, accurate, and reliable) in digestible chunks with text boxes, headings, and bullet points.

Design Principle 2: Mayer's Multimedia Principles

We used text with images (Mayer, 2005) to illustrate key points such as the example in Figure 2.

We created simple diagrams to focus on pertinent information, such as how meaning-making occurs during reading.

We drew attention to important information by emphasizing key information with bold text and call outs (text boxes). To make the content relatable, we tailored our language toward future teacher candidates and guardians reading this book and often used 2nd person pronouns to directly communicate with our audience.

We kept related elements together, such as the learning activity and the directions. We broke down complex information into coherent, manageable, bite-sized chunks with headings, subheadings, numbered lists, bullet points, and text boxes. We activated prior knowledge and reviewed key concepts before diving deep into the main content.

We included a variety of modalities, such as text, graphics, and videos, to present information. We either created diagrams or selected relevant, meaningful Creative Commons images and videos that aligned with our learning objectives (Mayer, 2005). We embedded YouTube videos and made them accessible by transcribing them with a transcript download.

Important terms

- **Phoneme:** the smallest unit of sound in the spoken language. For example, “dog” has three phonemes: /d/, /o/, and /g/. Listening to phonemes in speech requires auditory discrimination. Phonemic awareness (awareness of individual sounds) requires the hearing ability to identify, distinguish, and manipulate individual sounds in speech. Listening to lullabies and nursery rhymes develops awareness of the sounds of a particular language in children.
- **Morpheme:** the smallest unit of meaning in a language. For example, “cat” is one morpheme, a single unit of meaning. Adding an “s” (a bound morpheme) to “cat” changes the meaning from a singular (cat) to a plural (cats) with two morphemes. See the phonics PowerPoint in Chapter 4 for types of morphemes. The reference to a morpheme is made to distinguish it from a phoneme.
- **Graphemes:** the letters representing the smallest unit of sound in the spoken language. The phoneme /d/ is written with a grapheme d. The phoneme /f/ can be represented with the graphemes f or ph. Writing requires encoding phonemes into graphemes.
- **Syllable:** a unit of pronunciation having one vowel sound, with or without surrounding consonants. For example, nan-di-ta (3 syllables) or dog (1 syllable). See Jack Hartman’s video given in this chapter for syllable practice.
- **Onset:** the letter(s) representing the initial consonant sound before the vowel in a syllable or one-syllable word. For example, “C” in “cat” is an onset, and “d” in “dog” is an onset.
- **Rime:** the letters representing the medial vowel and final consonant(s) in a syllable or one-syllable word. For example, “at” in “cat” is a rime, and “og” in “dog” is a rime.
- **Short vowel sounds:** the short vowel sounds are usually found in (C)VC, (consonant)-vowel-consonant, words where the medial vowel has the short vowel sound, for example, the /a/ sound in *cat* or *apple*.
- **Long vowel sounds:** the long vowel sounds consist of words where the a, e, i, o, or u say their name. These words often have vowel teams or the letter e at the end, as in CVVC or CVCe words, for example, *rain* and *rake*.

FIGURE 5. An application of Mayer’s pre-training principle to review important concepts.

[Drag and Drop] How many syllables in each of the words: caterpillar, running, and containers?

2 syllables

3 syllables

4 syllables

Check

Reuse Embed

Phonemes are the smallest meaningful parts of a language.

True False

Check

FIGURE 6. Interactive elements to enhance Germane cognitive load processing.

Design Principle 3: Cognitive Load Theory

We composed this OER eBook to build on learners’ prior knowledge while considering the linguistic difficulty, relevance of images, and selection of media for our target audience.

We aimed to reduce the extraneous cognitive load (Clark & Kimmons, 2023) by only including what was pertinent for beginning pre-service teachers. We focused on enhancing Germane cognitive load processing (Sweller, 1988) or the mental effort needed to transfer short-term information into long-term memory through consistency, multimodality, and interactivity.

We kept a consistent organization with the introduction of key terms, learning objectives, key takeaways, reflective prompts, and interactive elements across the chapters. We explained key terms early on and kept the language difficulty low using simple sentences and a conversational style of writing targeted at our audience.

We explained concepts using visuals and summarized points in text boxes. We revisited concepts that were introduced in earlier chapters to refresh our learners’ memory and gave our learners repeated exposure to the concepts to build on their prior knowledge. We broke up the text to lessen the cognitive load with bullet points and short, concise sentences, and interactive elements such as drag and drop, and self-check learning activities and quizzes.

Design Principle 4: Heutagogy or Self-Determined Learning

We designed this book to facilitate self-determined learning for our preservice teachers. Our goal was to empower our adult learners with learner agency to access bite-sized information at their convenience, anytime and anyplace without any spatial or temporal constraints. We wanted to provide options for our learners to be able to leverage mobile learning to pursue their self-determined learning goals through heutagogy, which is a learner-centered approach (Hase & Kenyon, 2001; Moore, 2020). By presenting digital information nonlinearly through hyperlinks and interactive knowledge

Strategies to promote fluency

Readers' theater

Reader's theater is a play with dialogue where the actors orally read their parts written in a script. Readers' theater is a powerful, authentic way to build fluency in children while engaging them in meaningful activities. It capitalizes on oral reading with expression by allowing the children to play the roles of characters in the story. It first requires comprehending the story and the characters' traits to be able to role-play them. Using the voice and tone of the characters, the children read with intonation, pauses, and expression as needed. It is a fun, engaging way to build fluency!

Watch this reader's theater as an example on [YouTube: Reader's Theater: Building Fluency and Expression](#).

To implement this fluency-building strategy, look for books with lots of dialogue. You may introduce children to the readers' theater by choosing simple books with numerous dialogues to build their reading confidence. For example, *Little Red Hen* has several characters with multiple dialogues. Therefore, it makes for a great readers'-theater experience for young children.

Spoken-word poetry

Spoken-word poetry is performed poetry. The performer uses their voice and gestures to convey strong emotions through the verse. Amanda Gorman's poem *The Hill We Climb* can be utilized for spoken-word poetry. To implement this activity in your class, generate a list of topics with the students, or provide them with a choice of topics they may feel passionate about. Plan writing workshop times for the students to write, revise, and polish their writing. When they are ready, they may practice reading their poem with a peer. Volunteers may share their spoken-word poems with the whole class.

FIGURE 7. A screenshot of Heutagogy or self-determined non-linear learning through hyperlinks and segmented text.

checks, we empowered our learners to take ownership of their learning toward their personalized goals. Heutagogy implies the "self-directed knowledge journey" (Moore, 2020, p. 382) where learners learn and apply their knowledge. This is particularly relevant in teacher preparation as teacher candidates learn concepts and strategies and apply it to their work in practicum and student teaching. It provides learner autonomy for teacher candidates that is useful while personalizing and differentiating instruction for children. Figure 7 shows how learners can personalize their reading experience without feeling the need to read sequentially in a linear manner. For example, teacher candidates can just focus on the topic of spoken word poetry and revisit readers' theater later.

We made several key design decisions guided by the principles mentioned above. We were also guided by our values and philosophy rooted in care and social justice to mitigate barriers to ensure a satisfying learner experience. We aimed for the ease of use, access, and accessibility, and reader engagement through multimodality and interactivity while addressing diversity and inclusion. Based on our values, we see diversity as a strength and empathy as a valuable tool in developing intercultural understanding. In our book, we brought in multicultural literature, and the diversity of authors representative of our pluralistic society. We wanted to honor and celebrate our diverse learners and wanted their intersectional identities and concerns to be reflected in our

eBook to prepare them to be empathetic, caring future educators.

In the following section, we describe our design decisions.

Design Decision 1: Create an Open-Access Ebook Instead of a Print Book

We decided to create an openly licensed textbook that students and educators can access under a Creative Commons license instead of a print-based book due to several reasons. We wanted to create a free resource to mitigate barriers in accessing higher education due to the cost of books. From our personal experience, we feel the cost of textbooks can be a hindrance for students. Textbook costs have risen tremendously over the past 20 years, even after controlling for inflation (Ritholz, 2018). Consequently, the cost of traditional textbooks presents a significant barrier in students pursuing higher education (Durbin, 2015). Open textbooks offer cost savings for students (Weller, 2014). OpenStax initiative has saved students about \$3 million in textbook costs (Green, 2013). Further, if we were to compare the efficacy of traditional textbooks versus open textbooks on student

learning outcomes, there is no difference; therefore, open textbooks are equally effective without the added cost incurred with buying the traditional textbook (Beile et al., 2020; Hilton, 2016).

Thoughtfully designed open access eBooks can also support academic progress of students with their current updated, culturally relevant content, and multimodal interactive features (Asrowi, 2019). Trust et al. (2023) have indicated that eBook adoption has continued to rise post-pandemic, and they are regarded as a valuable teaching and learning resource. Apart from their increased usage in K-12 (OverDrive Education, 2020), they continue to be adopted by university faculty as well (Whiteford, 2021).

We created an open textbook as it provided us with more freedom of choice in selecting content and the ability to update it as needed through iterations, not only by the authors, but also by others who choose to revise, remix, and redistribute it. Open access allows free, open knowledge exchange and innovation in education. OER materials democratize education by providing open access to learning for all. That was the deciding factor in designing an open-sourced book vs a regular eBook behind a paywall that others could not revise or remix through open licensing.

We aimed for an inclusive, contextually relevant resource that was geared toward preservice teachers taking their

first literacy course. Knowing the benefits of open-source textbooks, we aimed to create a contextually relevant open eBook that our preservice teachers needed in a beginning literacy course. We provided our teacher candidates with a broad overview of literacy through multiple perspectives and the foundational concepts pertinent to preK-3 literacy teaching.

We found that no early literacy textbook was comprehensive enough to include the broad overview of pertinent topics such as technology integration in early literacy teaching, family literacy, cultural literacy, digital and new literacies, and supporting diverse learners that included children with adverse childhood experiences, dyslexia, and dual language learners. Discussion of children's multicultural literature was often not included in the early literacy books. In our open text, we sought to connect multicultural literature with dialogic reading relevant in the early grades. We also felt that conveying the explicit connection between literacy and other disciplines was missing in our textbooks. Our goal was to present a broad foundational view of early literacy with interdisciplinary connections while addressing diversity and inclusion in our open-sourced eBook.

We based our choice of content to align with universally recognized Teacher Assessment and Support Consortium (InTASC) standards. Through the creation of this openly licensed eBook, we strived to provide preservice teachers access to contextually relevant resources that would build teacher candidates' broad foundational knowledge of early literacy as a meaning-making practice, as well as facilitate self-directed learning at their fingertips. Creating an OER book would also contribute toward effective teacher preparation as it would strengthen teacher candidates' digital literacy skills and dispositions to share and learn with and from others for the common good, i.e., contributing to instructional innovation and pedagogic variety.

Second, we wanted to democratize knowledge where any educator could engage in the 5Rs: Retain, reuse, remix, revise, and redistribute (Hilton & Wiley, 2018) our text under a Creative Commons license. As opposed to static text, open educational resources like open access eBooks can be kept current through ongoing updates and revisions without incurring any additional cost. Open educational resources are educational materials that reside in the public domain, and everyone has permission to engage in retaining, reusing, revising, remixing, and redistributing them (Creative Commons, n.d.). The repurposing of open content and their adaptation based on a contextualized setting makes them distinctly unique, and therefore they promote democratizing knowledge. Educators may collaborate with other educators to repurpose the content or co-create with students. Our goal was to be able to update our book as it becomes necessary with evolving research paradigms, participatory technologies, and sociocultural changes. These updates are

instantaneous for readers and provided them with immediate access to open content. Other interested educators can contribute their ancillary materials to support the content of the book, or they may choose to engage in the 5Rs.

We decided to publish our book under a CC by 4 Creative Commons license, where educators would be free to share and adapt the material if they give attribution and appropriate credit to the original work and the authors. We chose not to have any restrictions by adding other licensing criteria to keep it simple for educators to use and adapt as they see fit.

Design Decision 2: Design an Interactive, Multimodal Ebook

Our choice for creating an open eBook was driven by being able to make it engaging for students through accessible, interactive, and multimodal content. Interactivity has a beneficial effect on reading performance, especially with questions that provide feedback (Clinton-Lisell et al., 2023) in teacher preparation. Our quizzes included feedback in terms of correct responses for students to self-check and revisit sections of the text that needed more study. Hence, our interactive content provided personalized, self-directed learning in chunks, especially for those teacher candidates who may not be able to concentrate for longer periods of time or prefer to study in short, manageable chunks with knowledge checks in between through interactive quizzes and reflection questions. Therefore, an interactive multimodal OER eBook makes for a substantive and detailed teacher preparation through personalization and opportunities for self-directed learning to accommodate various needs.

In our teacher education program, we often get non-traditional students who may be returning to school with family and work responsibilities. Providing them with access to multimodal, interactive, engaging content that they can access on their mobile devices anytime, anywhere to study in short segments of time sets them up for success as it supports their self-determined and self-directed learning. Students with disabilities also benefit from having multiple means to access the information. Additionally, open access, interactive, multimodal text not only helps in building teacher candidates' knowledge but also builds pertinent digital literacy skills and dispositions to value learning from and with others, and to contribute to the common good through sharing of pedagogical practices and innovative ideas. Therefore, we believe leveraging open-source textbooks plays a crucial role in effective teacher preparation.

We used the Pressbooks authoring tool as that was supported by our universities, and the lead librarians were ready to collaborate and offer support with the technicalities of the platform. They also added the capability of social annotation in our eBook upon our request if students were interested in collaborative meaning-making. In Pressbooks, we were able to embed hyperlinks, media, interactive H5P

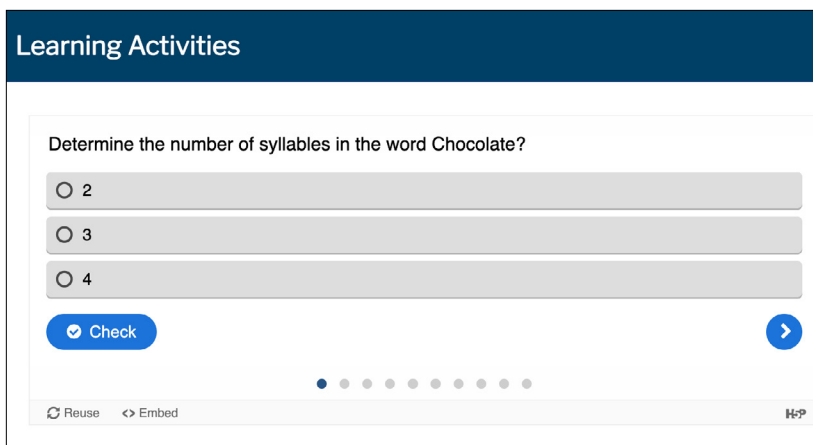


FIGURE 8. Screenshot of an interactive activity from the Methods of Teaching Literacy.

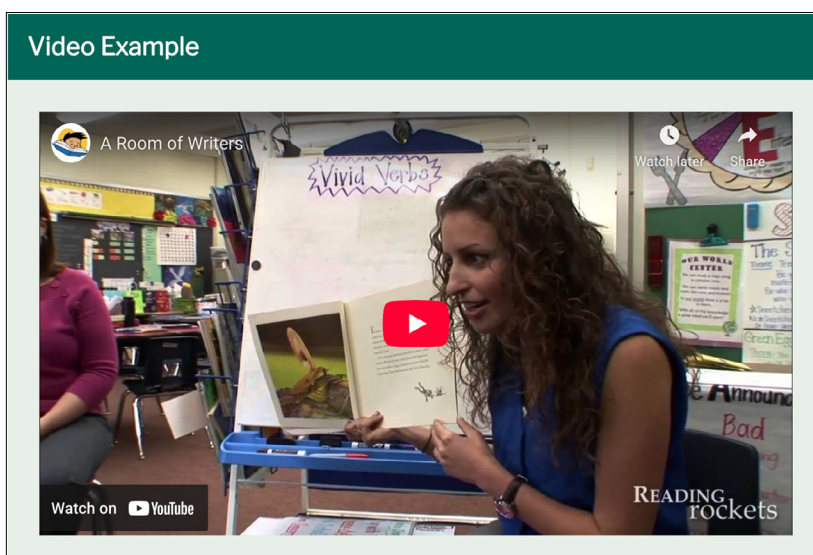


FIGURE 9. Screenshot of a video to embed multimodality in our text.

content, and accessibility features with “alt tag” for images that provide a description of the image for screen readers to be able to read the description, close captioning for videos, and transcript download options for videos that were auto close-captioned. The transcript download had the readable script with punctuation and capitalization, unlike auto-generated versions.

The interactive features with quizzes, drag and drop, etc., were strategically placed in the text to enhance students’ learning experience. Videos either had a reflective prompt embedded within them at strategic points, or we provided a follow-up reflective prompt or activity. Hyperlinks and interactive features created a non-linear electronic text that was digestible in bits and pieces instead of all at one time, leading to reduced cognitive load and more on-task engagement (Sweller, 1988). We also chose to break up the text into readable sections with subheadings, bullet points, or numbering, and had a consistent organization for ease of

use. Most chapters began with a quote, had a vignette and standards where warranted, learning objectives, key terms, learning activities, resources for teacher educators, and key takeaways. The information presented was supported by visuals, videos, and interactive knowledge checks. We hoped that strategic planning and interactivity of the electronic text would foster ease of use and make it engaging for students.

Multimodality or the combination of text, visuals, and audio or video (Mayer, 2005) affords greater access to information through multiple means of representation (CAST, 2018), thereby lowering barriers by providing multiple access points to comprehend the material (Trust et al., 2023). In our open eBook, we incorporated supporting videos and visuals that enhanced understanding of the material. We selected most of our visuals either from Wikimedia or other sites offering free, Creative Commons images. Having the content in more than one modality benefits the reader by creating a multisensory experience. Based on CAST (2018), multiple means of representation provide options of perception and comprehension. We chose to have colored textboxes for focused attention on an example or important points. The following [video](#) (A Room of Writers, n.d.) provides an example of a writing lesson.

DESIGN DECISION 3: DESIGN AN EASY-TO-USE EBOOK

Our goal was to reduce the cognitive load (Sweller, 1988) and make the eBook easy to use by applying pertinent design principles. We applied Torrey Trust’s writing for the Web techniques (Trust, 2019), Mayer’s (2005) multimedia principles, Sweller’s (1988) cognitive load theory principles, and Hase and Kenyon’s (2001) heutagogy for self-determined learning. We used bold text as necessary to highlight points; broke up the text into headings and subheadings to guide the reader; used white space between paragraphs; used bullet points and numbering to make it easy to read; and had shorter paragraphs as compared to a traditional print-based book. We used relevant, supporting visuals and videos, and text boxes to bring attention to the content. We strategically used a different font for quotations from the rest of the text.

We chose to keep a consistent organization throughout the book, which made it easy to use and navigate. Each chapter had learning objectives, keywords, learning activities, key takeaways, resources for teacher educators, and references.

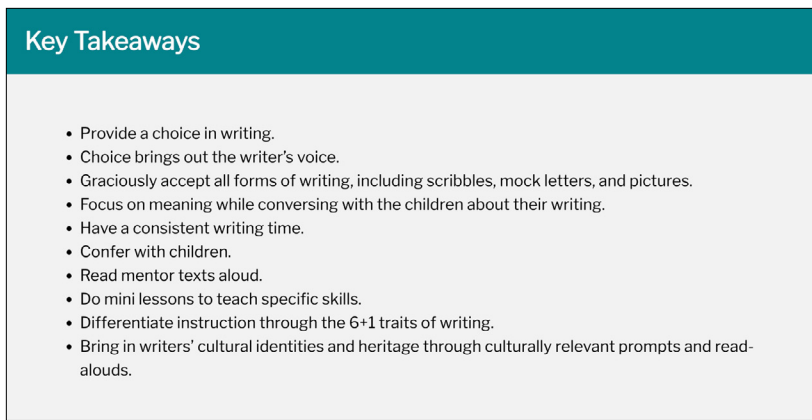


FIGURE 10. Screenshot of Key Takeaways from the Methods of Teaching Early Literacy.



FIGURE 11. Screenshot of a Video demonstrating representational and cognitive Justice from Methods of Teaching Early Literacy.

Chapters also had a textbox on important terms or a glossary that was relevant for the chapter. We included state standards for chapters on phonological awareness, phonics, vocabulary, fluency and comprehension, and writing specific to Iowa, and guided readers to refer to their state standards. Learning activities were strategically placed within the text for students to pause and reflect on their learning or self-evaluate their progress with interactive quizzes. A consistent, easy-to-navigate organizational structure was intentionally created for self-directed learning based on students' personalized goals. Learners could explore the material in chunks and revisit it later to continue the learning experience.

Design Decision 4: Use Instructional Design Framework Centering Social Justice

We decided to use Nancy Fraser's (2005) social justice framework which aligned well with the values of open education. This framework promotes democratizing knowledge for social justice and equity and empowers educators with agency to contribute to open education by co-creating,

adapting, revising, remixing, and redistributing to fit their contextual needs.

Fraser's social justice framework (Fraser, 2005) consists of representational justice, recognitive justice, and redistributive justice. Representational justice ensures that marginalized voices and perspectives are included in images and the text. In every chapter, we included diverse perspectives, including addressing the needs of dual language learners. We created the book centering the learner as a human being with their diverse cultural identities, life roles, and varied contextual needs as a global learner. We included culturally relevant texts that would act as mirrors to reflect our students' lived experiences and build on their background knowledge, while other texts would act as windows or sliding doors (Sims Bishop, 1990) to another cultural context; thereby, widening students' horizons and perspectives on plurality of our diverse society.

In the first chapter, we presented literacy from diverse, global perspectives, including UNESCO's view of literacy as a human right, and brought in critical literacy and a culturally sustaining framework with affirming, inclusive learning environments that view cultural differences as assets in teaching and learning. In Chapter 9 on discussion of diverse learners, we made sure to have inclusive representation of disabilities, Adverse Childhood Experiences (ACE), multilingual learners, and newly migrant students who are new to the dominant cultural context. Further, we discussed trauma-informed instruction, cultural literacy practices, translanguaging, and multicultural books that provoke critical thinking around issues of safety, belonging, race, gender, and social class. We also included videos and images in our book that were representative of our diverse society and cultural contexts. For example, in chapter 8 on writing, we included a picture prompt using a photograph taken in India. In chapter 5, the introductory visual shows a mixed-race family with mom and dad from different races.

In recognitive justice, contributions of diverse authors are valued and recognized. To address recognitive justice, we included perspectives from diverse authors and marginalized voices in our book. For example, we referenced Chimamanda Ngozi Adichie's video *The danger of a single story* (2009), Sim Bishops' (1990) mirror, windows, and sliding door metaphor, Hayes et al.'s (1998) asset-based approach working with migrant students, among other diverse authors, including children's multicultural book authors, whose valuable



FIGURE 12. Screenshot of an inclusive picture prompt for writing illustrating Representational Justice from *Methods of Teaching Early Literacy*.

Resources for teacher educators

- [The Go-To Literacy Resources for Literacy Teachers](#)
- [Teaching Reading Resources](#)
- [Early Learning Resources](#)
- [Wonderopolis- A Questioning Resource](#)
- [Nonfiction Reading Resource](#)
- [Library of Congress Resource](#)
- [Science Resource for K-12 Educators](#)
- [Smithsonian Learning Lab](#)
- [Time for Kids](#)
- [2022 Notable Books: 21 Best Poetry and Verse Novels for Kids | School Library Journal](#)
- [2022 Notable Poetry Books and Verse Novels – NCTE](#)
- [Notable Children’s Books – 2022 | Association for Library Service to Children \(ALSC\)](#)
- [Effectiveness of Early Literacy Instruction: Summary of 20 Years of Research](#)
- [International Literacy Association’s Resource on the Science of Reading](#)

Professional materials

- Slide deck on fluency: [OER Fluency Powerpoint](#)
- Slide decks on comprehension:
 - [OER Comprehension \(Think-Alouds\)](#)
 - [OER Comprehending Narrative Text](#)
 - [OER Reading Informational Texts](#)

FIGURE 13. Screenshot of resources and materials for teacher educators from *Methods of Teaching Early Literacy*.

contribution we recognized for bringing diverse perspectives to the content of this book.

The picture prompt in Figure 12 represents the Indian cultural context and activates learners’ background knowledge and honors diverse perspectives in writing. The picture was taken by the author while visiting India.

Our text also addresses redistributive justice. Redistributive justice, in the context of open education, is being able to

access the information without paywalls and being able to modify it to redistribute it to others. Under redistributive justice, equitable access to opportunities to thrive and realize one’s potential is the main goal. We hope that making this text freely available without any cost involved will be a step toward ensuring equitable access to education for all.

Design Decision 5: Include Teacher Educator Ancillary Materials

We took on this ambitious goal of creating and including ancillary materials for teacher educators. The decision to include teacher educator materials materialized because of a desire to create a one-stop learning experience and resource center, both for preservice teachers and teacher educators.

As literacy teacher educators at our respective universities, we all contributed materials we used in our classes in the form of slides, assignments, and quizzes. Having some of the educator materials as part of our coursework motivated us to continue finding pertinent ones online to include in this book. The goal was to empower teacher educators by providing them with a foundation to build, create, or customize teacher educator materials based on their context. The decision to include resources that educators can build upon and materials they can adapt, revise, or remix was meant to provide support both for preservice teachers and teacher educators.

UNFORESEEN OBSTACLES

Several unanticipated obstacles arose that made us reflect and evaluate our decision-making. We relied on our values and our problem-solving skills to overcome these obstacles. We discuss unforeseen obstacles in the following section.

Obstacle 1: Political Polarization

In the climate of political polarization, it is challenging to write about important issues of cultural and linguistic identity, equity, diversity of backgrounds and perspectives, and social justice topics that are relevant in literacy teacher training. We were situated in a predominantly white, rural midwestern state with strong political and religious beliefs. Political polarization was especially prominent during the COVID-19 pandemic when people debated everything from vaccines to school openings. To negotiate these challenges, we tried to convey a balanced narrative



Figure 1: Reading as a comforting experience. (Source: [“This image.”](#) by [Elf-Moondance](#) is in the [Public Domain](#))

FIGURE 16. A screenshot of the value of independent reading and book choice in cultivating joy in reading.



FIGURE 17. A screenshot of the published peer reviewed book housed in the Open Textbook Library.

debate. The learning activity in Figure 16 illustrates the value of independent reading and book choice in cultivating joy in reading.

OBSTACLE 3: THE PANDEMIC AND LIFE TRANSITIONS

The book was being written, and the content development of phase 1 occurred during COVID from 2020-2021. Given the realities of COVID, everyone had to be flexible with the timelines for completion of work. We had to have grace and patience during those uncertain times when being sick or a loved one's sickness could upend everything for weeks. We developed perspective as we continued working on this book during the challenging times of a global pandemic.

Coordinating our schedules as co-authors presented challenges, as we had different professional commitments and schedules among the three of us. However, we exhibited great flexibility with one another, and if one of our team members was unable to attend a Zoom meeting, we debriefed one another over the email or phone. Time constraints arose as some team members took on new professional responsibilities, and we had to do what we could, given our circumstances.

One of us relocated to another state for a new job during the tail end of COVID. Hence, there were multiple obstacles and challenges in completing this work, but we persevered during those difficult times to successfully complete this project. Our peer-reviewed OER book has been in the recommended list of libraries at several universities and is housed in the Open Textbook Library, Iowa State University, and the University of Northern Iowa with a [digital object identifier](#).

LIMITATIONS

We could not implement this book in our classes as we had intended. We had planned to assess the impact of our OER Book on student perceptions and student learning outcomes. Due to relocation and our new professional responsibilities, we were not in the same state and did not have the same classes that we designed this book for. Therefore, it was not feasible to see the impact on student perceptions or learning outcomes. We were also unable to have an interactive glossary and index as we had

planned due to limitations on our time and resources once the project was over. There would always be room for improvements that we hope to address in the future through our iterative work.

CONCLUSION

We became more aware and intentional about our design practices involving fundamental design principles, ethics and social justice, and value-based decisions (Abramenka-Lachheb et al., 2025) in designing this early literacy OER eBook. Since this was our first design project, we learned a lot about our strengths and the growth areas of our work through this process. We recognize the limitations and the growth potential in many aspects of our work. Our design team has decided, because of this project, what generally should not be done. The project may not have proven all intended realizations in Learning Experience Design (Schmidt & Huang, 2021), but it has brought them to the attention of our project team. This design project made us realize that designing an OER eBook is an iterative, continual process of learning and growth that evolves with changing circumstances and constraints situated in socio-cultural, political, technological, and pedagogical contexts.

This OER eBook is intended to fill the gap in perspectives on effective literacy preservice teacher preparation and consequently to address the literacy achievement gap in K-12. We brought in a balanced perspective utilizing the science of reading and structured literacy situated within a rich, multicultural children's literature program while personalizing learning for each child to meet their individualized needs. Further, we focused on multiple perspectives on literacy and emphasized building digital literacy, critical literacy, and new literacy skills in preservice teachers. We also focused on meaningfully integrating culturally relevant literacy practices and experiences across content areas and collaborating with guardians to advocate for the rights and needs of all children. Through the creation of this open-source eBook, we hoped to empower preservice teachers with learner agency to seek pertinent knowledge, skills (digital literacy skills), and dispositions to connect, collaborate, and co-create to accomplish their personalized learning goals as future educators.

ACKNOWLEDGMENT

Funding for this work was supported by the Open Education Group through 2023-2024 Open Education Fellowship, and book creation was supported by 2020 Iowa Regents Open Education Grant Program. Funding for the Iowa Regents grant program was provided by the CARES Act Governor's Emergency Education Relief (GEER) Fund.

REFERENCES

- Abramenka-Lachheb, V., Lachheb, A., & Ozogul, G. (2025). Value-sensitive design in the praxis of instructional design: A view of designers *in situ*. *British Journal of Educational Technology*, 56(1), 1-39. <https://doi.org/10.1111/bjet.13574>
- Adichie, C. N. (2009, July). *The danger of a single story* [Video]. TED. https://www.ted.com/talks/chimamanda_ngozi_adichie_the_danger_of_a_single_story
- A room of writers* [Video]. (n.d.). YouTube. <https://www.youtube.com/watch?v=UPlxc7IR2YI>
- Asrowi, Hadaya, A., & Abbas, G. (2019). The impact of using the interactive e-Book on students' learning outcomes. *International Journal of Instruction*, 12(2), 709-722. <https://doi.org/10.29333/iji.2019.12245a>
- Beile, P., Denoyelles, A., & Raible, J. (2020). Analysis of open textbook adoption in a history course: Impact on student academic outcomes and behaviors. *College & Research Libraries*, 81(4), 721-736. <https://doi.org/10.5860/crl.81.4.721>
- CAST, Inc. (2018). *Universal design for learning guidelines version 2.2*. <https://udlguidelines.cast.org>
- Chall, J.S. (2013). The great debate: Ten years later with a modest proposal for reading stages. In L.B. Resnick & P. A. Weaver (Eds.), *Theory and practice of early reading* (pp. 29-55). Routledge. <https://doi.org/10.4324/9781315060101>
- Clark, C., & Kimmons, R. (2023). Cognitive load theory. *EdTechnica: The Open Encyclopedia of Educational Technology*. <https://doi.org/10.59668/371.12980>
- Clinton-Lisell, V., Seipel, B., Gilpin, S., & Litzinger, C. (2021). Interactive features of e-texts' effects on learning: A systematic review and meta-analysis. *Interactive Learning Environments*, 31(6), 3728-3743. <https://doi.org/10.1080/10494820.2021.1943453>
- Creative Commons. (n.d.). *Open education*. <https://creativecommons.org/about/education/>
- Durbin, R. J. (2015, October 8). *Affordable College Textbook Act, S. 2176, 114th Cong., 1st Sess.* <https://www.congress.gov/bills/114/congress/senate/bills/2176/text>
- Fraser, N. (2005). Mapping the feminist imagination: From redistribution to recognition to representation. *Constellations*, 12(3), 295-307. <https://doi.org/10.1111/j.1351-0487.2005.00418.x>

- Friedman, B., Kahn, P. H., Borning, A., & Huldgtren, A. (2013). Value sensitive design and information systems. In N. Doorn, D. Schuurbiers, I. van de Poel, & M. Gorman (Eds.), *Early engagement and new technologies: Opening up the laboratory (Philosophy of engineering and technology)*, Vol. 16, pp. 55-95. Springer. https://doi.org/10.1007/978-94-007-7844-3_4
- Green, C. (2013, July 8). *The impact of open textbooks at OpenStax college*. <https://creativecommons.org/weblog/entry/38890>.
- Hase, S., & Kenyon, C. (2001, February 21). *From andragogy to heutagogy*. UltiBASE. <https://webarchive.nla.gov.au/awa/20010220130000/http://ultibase.rmit.edu.au/Articles/dec00/hase2.htm>
- Hilton, J. (2016). Open educational resources and college textbook choices: A review of research on efficacy and perceptions. *Educational Technology Research and Development*, 64(4), 573–590. <https://doi.org/10.1007/s11423-016-9434-9>
- Hayes, C., Bahruth, R., & Kessler, C. (1998). *Literacy con carino*. Heinmann.
- Ma, H. (2021). Empowering digital learning with open textbooks. *Educational Technology Research and Development*, 69, 393–396. <https://doi.org/10.1007/s11423-020-09916-9>
- Mayer, R. (Ed.). (2005). *The Cambridge handbook of multimedia learning*. Cambridge University Press.
- Moore, R.L. (2020) Developing lifelong learning with heutagogy: Contexts, critiques, and challenges, *Distance Education*, 41(3), 381-401. <https://doi.org/10.1080/01587919.2020.1766949>
- National Center for Education Statistics. (2022). *NSEP report card: NAEP 22 reading assessment: Highlighted results for the nation, states, and districts at grade 4 and 8*. <https://www.nationsreportcard.gov/highlights/reading/2022/>
- Overdrive Education. (2020, October 27). *New survey highlights increase eBook usage and value amid COVID-19 disruption*. <https://company.overdrive.com/2020/10/27/new-survey-highlights-increased-ebook-usage-by-schools-amid-covid-19/>
- Ritholz, B. (2018). *Price changes (Jan. 1997–Dec. 2017): Selected US consumer goods and services, and wages* [Infographic]. <https://ritholtz.com/wp-content/uploads/2018/02/pricechanges.png>.
- Sims Bishop, R. (1990). Mirrors, windows, and sliding doors. *Perspectives: Choosing and Using books for the Classroom*, 6(3), ix-xi. <https://scenicregional.org/wp-content/uploads/2017/08/Mirrors-Windows-and-Sliding-Glass-Doors.pdf>
- Schmidt, M. & Huang, R. (2021). Defining learning experience design: Voices from the field of learning design and technology. *TechTrends*. 66, 141-158. <https://doi.org/10.1007/s11528-021-00656-y>
- Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4
- TED. (2013, May). *Every kid needs a champion* [Video]. YouTube. [https://www.youtube.com/watch?v=F23ak31YnTI:contentReference\[oaicite:5\]\[index=5\]](https://www.youtube.com/watch?v=F23ak31YnTI:contentReference[oaicite:5][index=5])
- Thomas, P. (2022). *The science of reading movement: The never-ending debate and the need for a different approach to reading instruction*. National Educational Policy Center. <https://files.eric.ed.gov/fulltext/ED625611.pdf>
- Trust, T. (2019). Writing for the web. In *The EdTech books user guide: Tutorials, tips, and troubleshooting for the open textbook platform*. <https://edtechbooks.org/userguide/writingfortheweb>
- Trust, T., Maloy, R., & Yurchenkov, V. (2023). Building Democracy for All OER book: A design case. *International Journal of Designs for Learning*, 14(2), Article 34661. <https://doi.org/10.14434/ijdl.v14i2.34661>
- Weller, M. (2020). *25 years of EdTech*. AU Press.
- Weller, M. (2014). *The battle for open: How openness won and why it doesn't feel like victory*. Ubiquity Press.
- Wiley, D. & Hilton, J. (2018). OER-enabled pedagogy. *International Review of Research in Open and Distributed Learning*, 19(4), 134-147. <https://doi.org/10.19173/irrodl.v19i4.3601>
- Whitford, E. (2021, February 23). *More professors ditch print. Inside Higher Ed*. <https://www.insidehighered.com/news/2021/02/24/faculty-turned-digital-materials-lieu-print-textbooks-after-pandemic-hit>