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Making Meaning in the Classroom: Developing an OER for Equitable Teaching

Brenton Jackson
brenton.jackson@byu.edu

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Design & Development Project Report
Instructional Psychology & Technology, Brigham Young University

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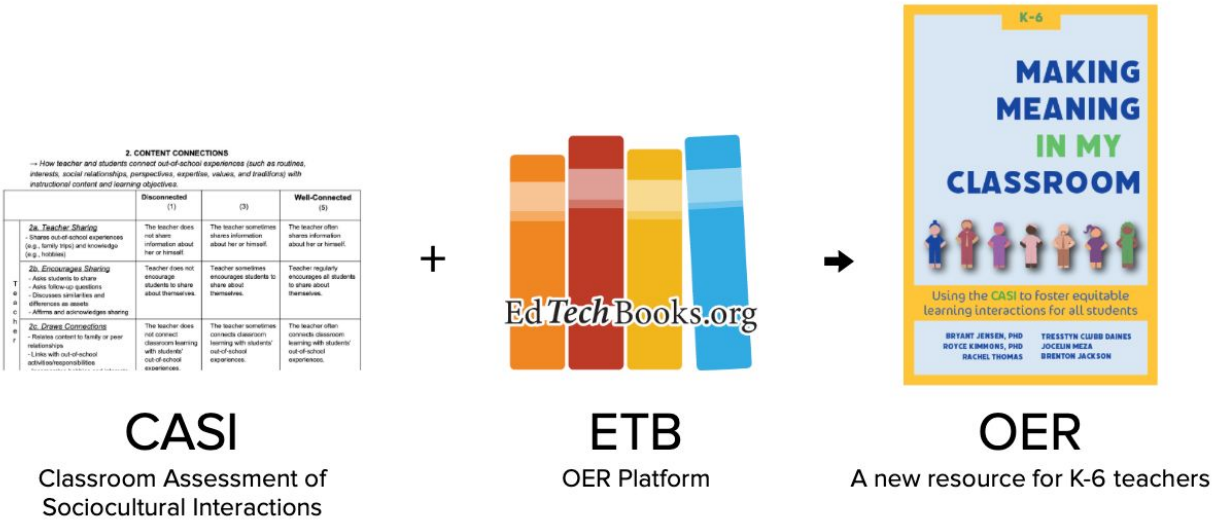
The Purpose

Diverse, multicultural classrooms are becoming the norm, rather than the exception, in the United States (US Department of Education). More and more teachers are working with diverse students and varied cultural backgrounds, some of which may be different from their own. As the proportion of minoritized students in US elementary schools continues to grow, teachers need resources that help them learn equitable teaching practices and connect with students' out-of-school experiences, social practices, and cultural identities. Unfortunately, many of the existing resources on equitable teaching are inaccessible or cost-prohibitive; others fail to demonstrate practicality for classroom constraints.

The purpose of this project was to respond to that need by designing, developing, and piloting two chapters of an open educational resource (OER) focused on helping K-6 teachers learn, practice, and apply equitable teaching practices. Specifically, this project took two dimensions of the Classroom Assessment of Sociocultural Interactions (CASI)—Language Use and Content Connections—and turned them into two instructional chapters that teach the dimensions in an accessible, practical, and effective way. (Note: We also wrote an Introduction chapter, but it was not assessed or evaluated.) The book is hosted on EdTechBooks.org (ETB), an OER platform created by Dr. Royce Kimmons.



This resource was created by a team of graduate and undergraduate writers (three total), plus one illustrator, under the direction of Dr. Jensen and Dr. Kimmons. While the whole book will eventually contain at least 11 chapters (covering the nine dimensions of the CASI plus an introduction and conclusion), my portion of the project focused on creating and assessing the first two chapters of the "Life Applications" CASI domain. I also sought to develop a repeatable chapter design process that future teams could use to finish the book.

As the project manager and lead author, I helped organize the team, developed a CASI training plan for writers, developed a content generation process and plan, and led the design, development, and evaluation of two polished chapters. Developing both a "final" product and a design process at this stage is critical to enable successful future chapter iterations.

The Clients

The primary client for this project was **Dr. Bryant Jensen** of BYU's Department of Teacher Education. A secondary client for the project was **Dr. Royce Kimmons** in BYU's Instructional Psychology and Technology (IP&T) department. Other stakeholders include local school administrators and teachers, specifically in Title I schools, for (and with) whom the product is being designed.

Dr. Jensen is a first generation college graduate whose research focuses on improving classroom teaching and learning for minoritized children, especially Latinos of Mexican and Central American heritage. This project is an outgrowth of that research effort. As a faculty member in BYU's Department of Teacher Education, he created the CASI to help teachers measure and improve their equitable teaching practices.

Dr. Jensen's overall research goals are proximal and distal: proximally, to enhance equitable teaching *practice* and associated *knowledge* and *dispositions* of teachers; distally, to enhance academic *identities* of intersectionally minoritized learners and facilitate *gains in their academic performance*.

Dr. Kimmons is also a first generation college graduate whose research/development focuses on making educational institutions, practices, and educator behaviors more open and accessible. As a faculty member in IP&T, Dr. Kimmons created EdTechBooks.org, an exciting new OER platform that combines high-quality UX and cutting-edge analytics to create a better open textbook experience. EdTechBooks seeks to better meet the needs of students and teachers by enabling equitable access to learning materials. Dr. Kimmons is partnering with Dr. Jensen to host the CASI book on ETB.

The Project Goals

Client Goals

Dr. Jensen's primary goals for this specific project included:

- Transform the CASI, which is a unique and powerful performance measurement tool, into a chapter format that is recognizable, relevant, and feasible for teachers to implement
- Evaluate local teachers' perceptions of and experience with the CASI book

These general goals were primarily assessed and evaluated via the learning goals we set for our teacher learners:

Learning Goals

Following study of the CASI book, teacher-learners will be able to:

1. Accurately define the given dimension.
2. Discuss the benefits and challenges of the dimension.
3. Use indicators to score a written teaching scenario.
4. Generate ideas for adjusting/adapting a lesson plan to better integrate the CASI indicators.
5. Meaningfully discuss the practicality of the resource (recognizability, relevance, feasibility).

Guiding Influences

Beyond the learning goals, our efforts were first and foremost guided by Dr. Jensen's overall mission to enable meaningful, equitable, sociocultural teacher-child interactions in local classrooms.

Additionally, Dr. Kimmons' experiences with inequity in education, as well as his EdTechBook values (Freedom, Accessibility, Usability, Quality), provided additional guidance and direction. He expected that our student team would create an OER that helps overcome existing barriers to teacher learning about equitable teaching practices and represents the EdTechBooks platform well with high-quality content.

Our writing efforts were undergirded by an awareness that Dr. Jensen expected us to create not only a product, but a process as well; that is, while our primary work was to create chapters, we also had the equally important task of developing a content creation process and workflow that could be used by future CASI teams.

Experiential Learning Mission

Funding for this project came primarily from BYU Experiential Learning. In alignment with their mission, Dr. Jensen and Dr. Kimmons sought to create an experience that required us to "master and use subject matter; increase capacity to deal with complex and new situations; develop skills for lifelong learning; clarify values; and develop the capacity to contribute to [our] communities" (BYU Experiential Learning).

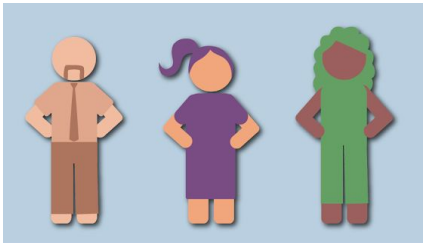
Other Stakeholder Influences

Our design and development of the CASI resource was influenced by the needs and constraints of stakeholders, including teachers, future team members, and BYU. Pursuant to the mission of our experiential learning grant, the students on the team were expected to engage in deliberate and reflective experiential learning about equity and access in an applied setting and design for real clients. We also sought to stay under budget and on schedule. To aid future team members in mind, we needed to document successes and failures of the project and capture these in a more permanent way than word-of-mouth. Finally, for the benefit of our readers and in the spirit of design-based research and development, we needed to involve local schools, administrators, and teachers in our process and actively pursue future possibilities for professional development using the CASI.

Project Needs and Constraints

Target Learners

Based on my learner analysis, we knew our target learners were K-6 teachers in Title I schools local to surrounding Utah districts. These teachers are somewhat racially/ethnically diverse, but they also have highly racially, ethnically, and culturally diverse classrooms. They have not had previous training with the CASI, and were willing to help us pilot two chapters despite the challenges of COVID-19.



Importantly, these teacher-learners differed in **age, race/ethnicity, years of experience, education level, baseline awareness of equitable teaching practices,** and **beliefs about the value or necessity or equitable teaching**.

The learning analysis also identified reasons why teachers could struggle to achieve the learning goals without some help. Without their current knowledge and no additional resources, these teachers may lack:

- Awareness of equitable teaching practices (e.g., CASI principles of Language Use, Content Connections)
- Knowledge of how equitable teaching practices can be concretely defined, measured and evaluated
- Understanding of why equitable teaching practices are important (how they enable minoritized students' success in school)
- Experience evaluating teaching examples according to measures of equitable teaching
- Experience adapting lesson plans to integrate equitable teaching practices

More insights and personas for our learners can be found in the full Learner Analysis.

Environmental Constraints

Environmental analysis showed that this resource needed to be as practical and accessible as possible in order to be successful. The competing demands of K-6 teaching environments

encouraged us to focus on addressing issues that administrators and teachers care about and provide recognizable, relevant, and feasible practices they could apply and measure.

EdTechBooks has many affordances that serve our stakeholders' needs well. Given that we approached evaluation formatively, we anticipated that our user insights from the Pilot would be helpful for determining whether there were additional constraints in the environment that we did not predict/account for.

More detailed insights can be found in the full Environmental Analysis.

Consulting Products and Precedent

There are many products on the market that are meant to help teachers learn culturally responsive/equitable teaching practices in one way or another. However, few of these products are free and/or open. Only a small portion of these give teachers concrete ways to measure and improve their performance (most include only theoretical principles, reflective questions, and lesson ideas). No products currently integrate the CASI or CASI domain/dimension/indicator system.

There is a clear need for a widely accessible resource on equitable teaching practices that is grounded in research, clearly practicable, and high quality, while also being free and openly accessible. My consultation of existing products indicated ours would be successful if it:

- Was conceptually rich and also practically recognizable, relevant, and feasible
- Removed barriers of cost and access, while maintaining high quality of content
- Was designed to produce reliable and useful teacher performance data

A full analysis of existing materials can be found in Consulting Products/Precedent.

Timeline and Budget Constraints

The original two-year development timeline for the book has a budget of $34,515, drawn from an experiential learning grant that extends until December 2020. My portion of that grant included 1.5 years of undergraduate student funding and one semester of graduate student funding. Additional funding for my work on the project, beyond the first semester, was drawn from Dr. Kimmons' personal research account. With those two sources, the total budget for my portion of the CASI book project was **$21,664**.

Funding for the teacher pilot (**$900**) was drawn from Dr. Charles Graham's and Dr. Royce Kimmons' respective research accounts.

A full exploration of these constraints, including a specific budget and timeline for this portion of the overall book development, can be found in Budget and Timeline.

Designing for Project Constraints

Our product design (detailed in the next section) responded to constraints mentioned previously by:

- Grounding the introduction in research-based concepts and findings from the literature
- Providing practical lesson ideas linked to Common Core standards

- Affiliating with varied teacher situations by depicting different classroom scenarios, varying the demographics, age, teacher characteristics, and lesson plans
- Providing repeated opportunities to evaluate teaching scenarios with the CASI rubrics
- Scaffolding classroom application with the PDAR cycle, instructions, and multiple evaluation guides and resources
- Enabling further self-directed learning by linking to relevant websites, articles, podcasts, etc. in the chapter
- Apply agile project management techniques to develop content quickly and deliver minimum marketable features (MMF) regularly to Dr. Jensen and Dr. Kimmons

Product Description

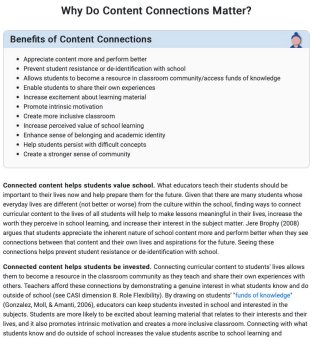
The final product was the first two content chapters of the CASI-focused book, hosted on the ETB platform. Each chapter was designed to help teachers understand, recognize, and apply one of the CASI dimensions (either Language Use or Content Connections). This design responds to teacher needs—it is simple, readable, practical, and free. Detailed walkthroughs of the design can be found in Product Walkthrough and Design Specifications.

Chapter Structure

Part I: Introduction ➡ **Part II:** Scenarios ➡ **Part III:** Application

Part I: Introduction

- *What is this dimension?*
- *Why does this dimension matter for teachers/students?*
  - Reflective questions; relevant research; student outcomes; dispositional awareness
  - Learning checks related to the dimension's importance
- Indicators: *How do we measure the dimensions?*
  - Explanation, rubrics, examples, learning checks


Why Do Content Connections Matter?

Benefits of Content Connections

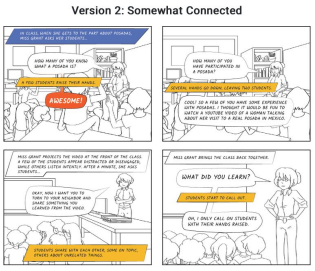
- Appreciate content more and perform better
- Prevent student resistance or de-identification with school
- Allows students to become a resource in classroom community/access funds of knowledge
- Enable students to share their own experiences
- Increase excitement about learning material
- Promote intrinsic motivation
- Create more inclusive classroom
- Increase perceived value of school learning
- Enhance sense of belonging and academic identity
- Help students persist with difficult concepts
- Create a stronger sense of community

Connected content helps students value school. What educators teach their students should be important to their lives now and help prepare them for the future. Given that there are many students whose everyday lives are different (not better or worse) from the culture within the school, finding ways to connect curricular content to the lives of all students will help to make lessons meaningful in their lives, increase the worth they perceive in school learning, and increase their interest in the subject matter. Jere Brophy (2008) argues that students appreciate the inherent nature of school content more and perform better when they see connections between that content and their own lives and aspirations for the future. Seeing these connections helps prevent student resistance or de-identification with school.

Connected content helps students be invested. Connecting curricular content to students' lives allows them to become a resource in the classroom community as they teach and share their own experiences with others. Teachers afford these connections by demonstrating a genuine interest in what students know and do outside of school (see CASI dimension B. Role Flexibility). By drawing on students' "funds of knowledge" (Gonzalez, Moll, & Amanti, 2006), educators can keep students invested in school and interested in the subjects. Students are more likely to be excited about learning material that relates to their interests and their lives, and it also promotes intrinsic motivation and creates a more inclusive classroom. Connecting with what students know and do outside of school increases the value students ascribe to school learning and

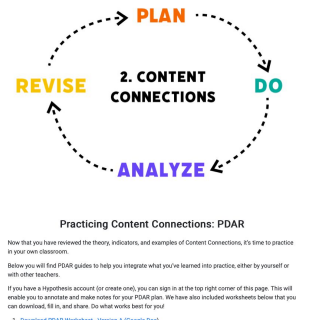
Part II: Scenarios

- This is the "center" of the chapter: three teaching scenarios, shown in comic format, that depict disconnected, medium-connected, and well-connected versions of the same hypothetical lesson. Each scenario is aligned to a Common Core standard.
- Each scenario has a written transcription and our team's CASI rating for all indicators.



Part III: Application In the Classroom (PDAR)

- This section describes the *Plan, Do, Analyze, Revise* cycle (PDAR) in context of the dimension.
- Teachers are encouraged to plan a lesson that integrates the dimension, video record or peer-analyze them teaching that lesson, then analyze what worked and what didn't and revise their plan accordingly.
- Also: a conclusion and a list of resources for teachers to explore further.

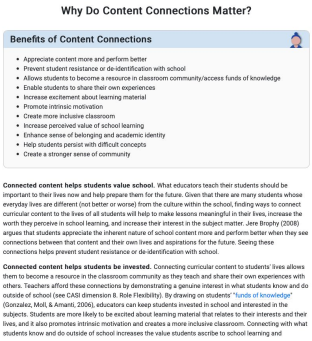


Alignment with Learning Goals

Part I: Introduction

Learning Goal 1: Accurately define the given dimension.
Learning Goal 2: Discuss the benefits and challenges of the dimension.

Part I defines the dimension in several ways. That definition is deepened in Part II. The “Why it matters” section explores the significance of the dimension and addresses common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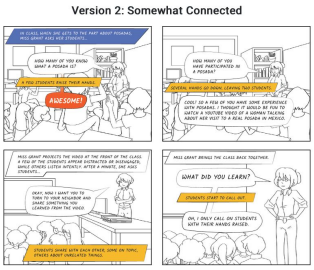
Part II: Scenarios

Learning Goal 3: Use indicators to score a written teaching scenario.

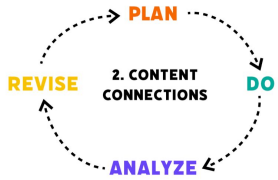
Part III’s PDAR cycle guides teachers through the process of adjusting/adapting lesson plans and includes questions to spark ideas.



Part III: Application In the Classroom (PDAR)

Learning Goal 4: Generate ideas for adjusting/adapting a lesson plan to better integrate the CASI indicators.

Part III’s PDAR cycle guides teachers through the process of adjusting/adapting lesson plans and includes questions to spark ideas.




Practicing Content Connections: PDAR

Now that you have reviewed the theory, indicators, and examples of Content Connections, it's time to practice in your own classroom.

Below you will find PDAR guides to help you integrate what you've learned into practice, either by yourself or with other teachers.

If you have a Hypothesis account (or create one), you can sign in at the top right corner of this page. This will enable you to annotate and make notes for your PDAR plan. We have also included worksheets below that you can download, fill in, and share. Do what works best for you!

1. Download PDAR Worksheet - Version A (Google Doc)
2. Download PDAR Worksheet - Version B (Google Doc)
3. Open Content Connections CASI rubric (Google Doc)

5. Meaningfully discuss the practicality of the resource (recognizability, relevance, feasibility).

➡

In the case of this pilot, the **overall experience** of the chapter facilitates teachers’ abilities to meaningfully discuss the practicality of the resource.

Design Process and Evolution

Phase 1: Team Building and CASI Training → **Phase 2:** Design and Develop Ch. 2 Prototype → **Phase 3:** Develop Ch. 1 Prototype; Revise Ch. 2 → **Phase 4:** Pilot Testing and Evaluation with Teachers

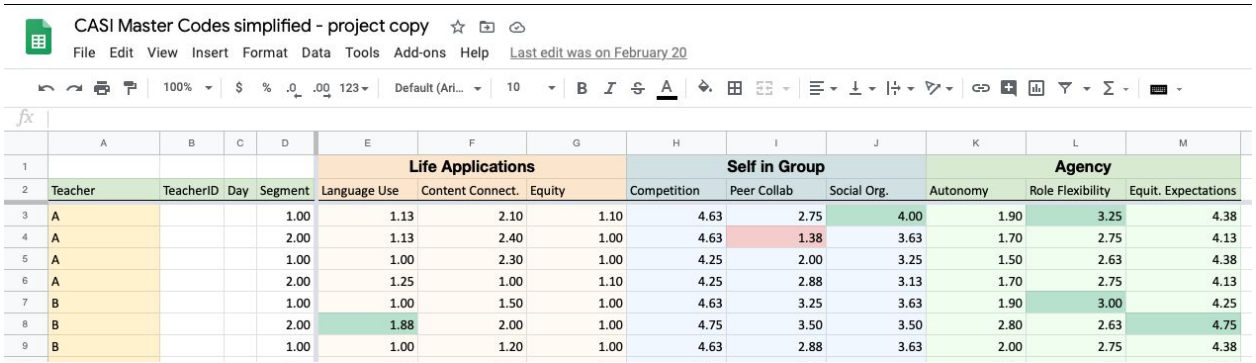
Phase 1: Backgrounding and Team Building

(July – September 2019)

Though the project began with a strong general vision (bringing the CASI to teachers via OER), Dr. Jensen gave me considerable license to determine the best way to achieve that vision. To begin, we hired two more writers over the course of July–August 2019.

- Student 1: undergraduate writer, ElEd major, fluent Spanish
- Student 2: undergraduate writer and ElEd major, native Spanish

As a writing team, we initiated the necessary process of training with the CASI—mastering the domains, dimensions, and indicators, and scoring lots of teacher videos. This stage involved frequent check-ins with Dr. Jensen to test out our understanding and pitch ideas.


CASI Master Codes simplified - project copy

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					Life Applications			Self in Group			Agency		
Teacher	TeacherID	Day	Segment	Language Use	Content Connect.	Equity	Competition	Peer Collab	Social Org.	Autonomy	Role Flexibility	Equit. Expectations
A			1.00	1.13	2.10	1.10	4.63	2.75	4.00	1.90	3.25	4.38
A			2.00	1.13	2.40	1.00	4.63	1.38	3.63	1.70	2.75	4.13
A			1.00	1.00	2.30	1.00	4.25	2.00	3.25	1.50	2.63	4.38
A			2.00	1.25	1.00	1.10	4.25	2.88	3.13	1.70	2.75	4.13
B			1.00	1.00	1.50	1.00	4.63	3.25	3.63	1.90	3.00	4.25
B			2.00	1.88	2.00	1.00	4.75	3.50	3.50	2.80	2.63	4.75
B			1.00	1.00	1.20	1.00	4.63	2.88	3.63	2.00	2.75	4.38

Key Design Actions

The decision to spend several months building expertise with CASI principles, rather than jumping straight into content design/development, was crucial. Until we understood all 9 CASI dimensions, we lacked a frame of reference to compare it to existing resources for equitable teaching and to know what we should emphasize. Backgrounding with the CASI helped us identify where it diverged and offered something new. Unlike typical book authors, none of us were experts in equitable teaching, but our training with the CASI helped develop expertise (and some confidence).

The CASI training process was not an exercise in unanimity; as a student team we frequently debated the indicators and scores during team meetings. These discussions often unearthed pain points for us, which we decided would probably be pain points for our learners as well. To respond, we identified the areas of the CASI that needed clarification or further development to make sense to teachers, and these clarifications were integrated into later chapter designs.

The CASI scoring process also contributed to our learner analysis in three important ways.

1. **We began developing informal teacher personas** by recording average teacher scores across dimensions and areas they struggled with (knowledge/practice gaps).
2. **We began developing design empathy** for our teacher-learners as we watched actual classroom footage.
3. **We began developing a repository of lesson scenarios** that would seem realistic to our teacher-learner audience. The videos provided useful source material.

As a team we studied the Better Book Model for Education Research and Development and debated the role that students and teachers—our audience—would play in the design and continuous improvement of the CASI textbook.

Challenges and Adaptations

1. **Inexperience** – most books on EdTechBooks are written by experts in the field (either graduate students or university faculty). We grappled with dual problems: how to do our job well, and how to beat back the imposter syndrome that creeped in as we dove deeper into the CASI and the (frankly) huge problem of equitable teaching.
2. **Don't "jump the gun"** – as a writing team, we worried about the implications of focusing on one dimension right out of the gate. We wanted to avoid creating a pilot chapter structure that wouldn't generalize to the others dimensions, structurally or pedagogically. Eventually we settled on a solution: focus our initial example-gathering efforts on one dimension from *each* domain (to get a broader idea of how they might differ), and then settle on one dimension for our pilot chapter once we had more experience.

Phase 1: Team Building and CASI Training	→	**Phase 2:** Design and Develop Ch. 2 Prototype	→	**Phase 3:** Develop Ch. 1 Prototype; Revise Ch. 2	→	**Phase 4:** Pilot Testing and Evaluation with Teachers

Phase 2: Design and Develop Chapter 2 (Content Connections)

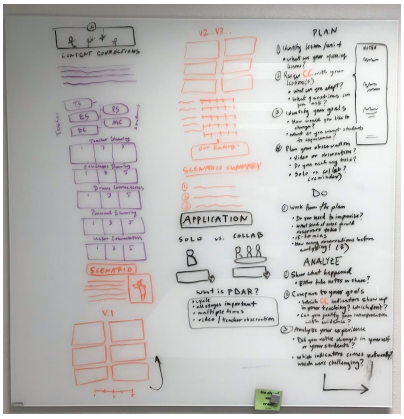
(September 2019 – January 2020)

During this stage, the student team continued to study the CASI and score videos, but we also began designing and developing prototypes for our first chapter. Near the beginning of Phase 2, the writing team settled on one major feature: **using a comic strip format** to depict "main scenarios" that would ground each chapter. To create the comics, we needed an illustrator, so we hired one:

- Student 3: graphic designer/illustration and pre-animation major

Key Design Actions

With Dr. Jensen's guidance, we settled on the first chapter dimension (Content Connections) and began developing mockup outlines. Student 3 began creating prototype characters and layouts. Dr. Kimmons supervised her graphic design and illustration efforts, and together they began developing an illustration workflow with reusable assets as well as brainstorming visual styles that would appeal to elementary school teachers.

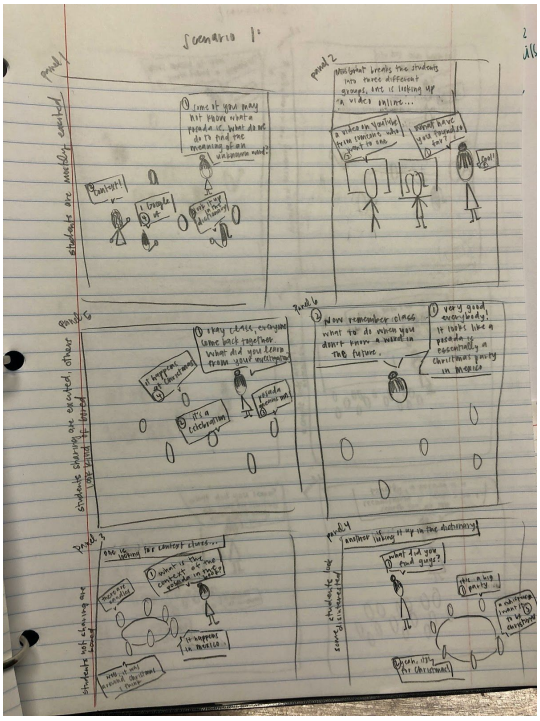


Meanwhile, the writing team began creating mockups for potential chapter structure. The modular design of chapter content enabled us to reorder sections and pitch several versions to Dr. Jensen. Prototype 1 sparked debate about the value of beginning the chapter with a scenario (as a hook and scaffold for later instruction) versus beginning with instruction and progressing to scenarios. Following this critique, Prototype 2 has reordered sections that began with instruction, making scenarios the "center" of the chapter. Dr. Jensen approved this prototype.

With Dr. Jensen's approval, the writing team began developing the main scenario, which involved three comic strip-style depictions of a teacher reading *Becoming Naomi Leon* with her students and discussing *posadas.* Creating the comic scenarios was more difficult than we expected because of Dr. Jensen's important pedagogical constraints (see Challenges and Adaptations), but after several iterations we had three approved scenarios scripted. These were sent to Student 3, who began working on illustrated the 18 comic frames (6 for each scenario version).

While Student 3 developed the visuals, the writing team worked on developing other sections of the chapter (e.g., introduction, importance, indicators, indicator examples, PDAR application).

Each of these was ideated, iterated, and edited between the three writers. This stage involved significant ambiguity and creative freedom, especially because Dr. Jensen was frequently traveling to run a professional development project with teachers in Mexico.
To ensure that we were progressing in the right direction, I periodically sent drafts to Dr. Jensen for approval, while Dr. Kimmons observed Student 3's illustration progress.



Early storyboards from the writers

Student 3's Scenario 1 illustration draft

Most of the written content for the chapter was developed by winter break, though the illustrations lagged behind because Student 3 had had to wait for us to give her the written scripts for the comics. Throughout January 2020, the chapter draft was "finalized" in Google Docs and then uploaded to EdTechBooks, where Dr. Kimmons added more visual design elements.

Challenges and Adaptations

1. **Terminology traps** – once the team began writing in earnest, we quickly discovered that we were out of our depth terminologically. One source used equity; another, equality. Cultural competence, cultural knowledge, culturally responsive teaching, and culturally relevant teaching all seemed interchangeable to us—how were all these terms related, and how important were the nuanced differences between them? It took several conversations with Dr. Jensen to settle on terminology for the book. In the end, we decided to default to "equity" and "equitable teaching."
2. **Building the plane while flying it** – Though we had already started developing content, Dr. Jensen saw the importance of maintaining our bi-weekly discussion of CASI dimensions and equity concepts. This created an unusual sense of "building the plane while flying it"— our understanding of equity kept evolving, leading us to edit the content

we had already written. Dr. Jensen asked us to reframe how we think about equity in education, which often involved questioning our own assumptions and experiences.

3. **Scenario constraints** – Developing the first scenarios took considerable time because we had to create our format from scratch. One major design constraint was finding creative ways to make scenarios more realistic and less contrived. They needed to be aligned with actual Common Core standards; further, even the "culturally disconnected" examples had to show high *generic* teaching quality (e.g., questioning strategies, individual feedback, student engagement) while varying the degree of "content connections" depicted in each version. Balancing generic aspects and cultural aspects of teaching while crafting a "realistic" scenario proved to be a subtle art and a challenge. The student team had a lingering concern at this stage that teachers would not be able to distinguish the nuances of generic and cultural dimensions in a 6-frame comic.
4. **Design bottleneck** – We realized halfway through Phase 2 that Student 3's illustration work was dependent on getting finalized scenarios from the writing team, creating a bottleneck that required process innovation. Instead of starting from the beginning of the chapter and writing to the end, we needed to iterate each of the scenario scripts from start to finish and pass them off to Student 3 before moving to other sections of the chapter.

Phase 1: Team Building and CASI Training	→	**Phase 2:** Design and Develop Ch. 2 Prototype	→	**Phase 3:** Develop Ch. 1 Prototype; Revise Ch. 2	→	**Phase 4:** Pilot Testing and Evaluation with Teachers

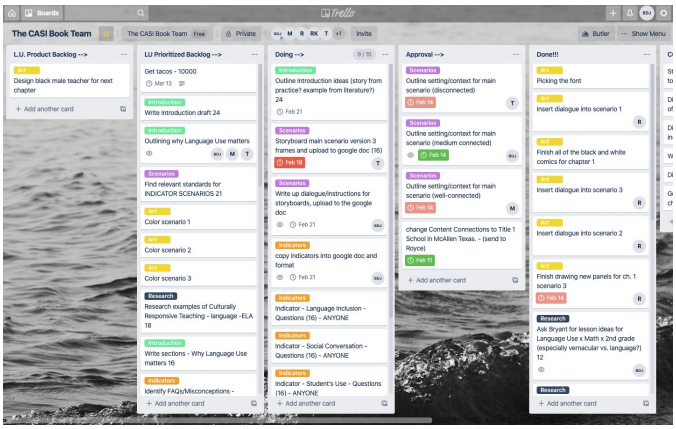
Phase 3: Develop Chapter 1 (Language Use) (February – April 2020)

After uploading a full draft of the first chapter, we wanted to set a more ambitious timeline for the second chapter. The first chapter we wrote (chronologically) was actually the second chapter in the book (Content Connections); this new chapter would be the first content chapter in the book. Unlike Phase 2, we gave ourselves a hard deadline (April 15) to have the new chapter complete.

Key Design Actions

During Phase 3, we tried to implement the lessons learned during Phase 2 into our design process. These included trying out more proactive project management techniques to decrease the unevenness of our workflow and help us meet a swifter deadline. The changes could be broadly grouped into communication improvements and product development improvements.

We began to meet as a student team more frequently, and used the initial meetings in February to develop a product backlog for the new chapter. Based on our Phase 2 experience, we sized our tasks down to chunks that could be completed weekly and prioritized them to reduce bottlenecks between writing and illustration (i.e., beginning storyboarding/script development for the new scenarios immediately, while Student 3 was finalizing the illustrations for the previous chapter). Then, with that product backlog, we began to "divide and conquer" the content creation, rather than all of us working on the same sections simultaneously. We each focused on areas of strength—Student 1 wrote scenario drafts, Student 2 developed examples for the indicators, and I worked on the introduction, application, and conclusion sections. I also formalized the learner personas using Utah Title 1 survey data Dr. Jensen provided.



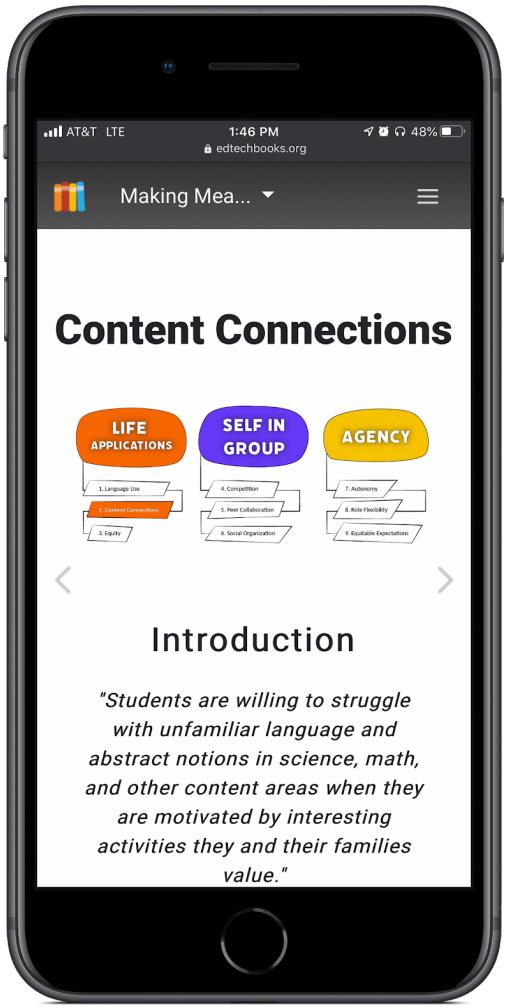
Other adjustments included sending more frequent approval requests to Dr. Jensen (to avoid large rewrites), actively monitoring risks to our progress towards the April 15 goal, and adapting to the unexpected outbreak of COVID-19 and subsequent change to our team interactions. Two students moved home and all meetings moved to Zoom, but the team was resilient and recovered our progress toward Chapter 1 completion with only a little lost time.

Challenges and Adaptations

1. **Implementation during a pandemic** – Implementation questions became more salient the closer we got to May, when we planned to do a small pilot with local K-6 teachers. We

knew the purpose of the CASI was to improve sociocultural interactions, not just give teachers theoretical or abstract knowledge. Practical knowledge was the whole point. But with COVID-19, it became unrealistic to ask teachers to adapt their lessons for Content Connections or Language Use—most were just trying to figure out how to get their students on Zoom once a day. We had to adjust our expectations and assessment questions for the pilot, while still writing a practice-oriented chapter with future teachers in mind who *could* adapt their lessons in a real classroom.

2. **COVID-19** – The pandemic and effective closure of BYU didn't affect our process as much as I feared. The biggest adjustment was allowing time for team members to move home; besides that, we simply moved our meetings to Zoom and continued working. In the end we finished the Language Use chapter only a week later than expected.



Phase 4: Pilot Testing and Evaluation (May 2020)

In May 2020, we reached out to a small sample of Utah teachers that had previously worked with Dr. Jensen on CASI development, requesting their help with a pilot of Chapter 1 (Language Use) and Chapter 2 (Content Connections). Nine (9) teachers, from three grade level groups at three schools expressed interest in participating.

From May 5–18, teachers participated in two stages of pilot assessment:

1. **May 5–May 13:** teachers were given 1.5 weeks to review their assigned chapter and complete a 45 minute survey
2. **May 13–18:** each grade level group (3 total) participated in a semi-structured focus group/interview over Zoom, conducted by myself.

Each teacher was compensated $100 total for three hours of participation.

More details on implementation of the book are below. Results and evaluation of the assessments, as well as more details on the process, can be found in the Assessment and Evaluation section as well as Assessment Reports and Instruments.

Product Implementation

While we were not able to observe teacher practice in the classroom due to COVID-19, our May 5–18 pilot still enabled us to observe how real teachers interacted with the book and its contents, giving us valuable insight into their experience, constraints, and concerns. Given that the book's larger development arc is bent toward continuous improvement and partnerships with teachers very much like our participants, the few deviations from our "intended use" are helpful for improving the design. With that said, product implementation did not result in any unexpected difficulties for teachers that we are aware of.

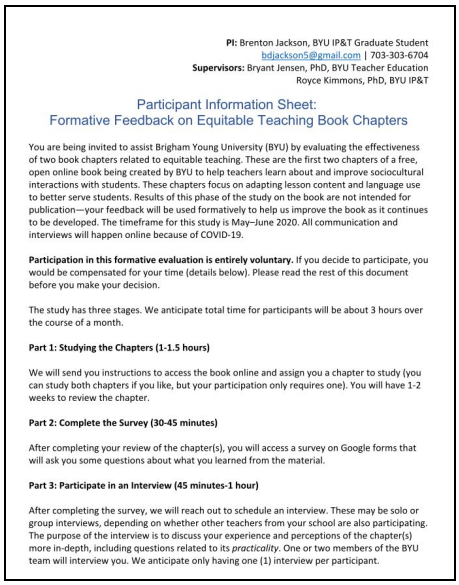
Accessing the Product

To access and study the chapters, participants used any device with an internet browser and connection. This could have been done through mobile or desktop/laptop, at home, school, or elsewhere, and teachers did not need to login or create an account. We provided instructions and links for accessing EdTechBooks, and teachers reported no difficulties accessing the book online. Some downloaded the PDF version of the book so they could take notes; aside from an inability to see correct answers to the learning checks on the PDF (an important finding that we took note of), using the PDF worked for them.

Communication Instruments

We provided our pilot teachers with instructions and information on three occasions which explained:

- The nature of the project; why we are writing the book (including explanation of CASI and EdTechBooks)
- What would be expected of them as participants (activities and time commitment)
- How to access the chapters and directions for study
- How to access and complete assessments (survey questions and interviews)
- Instructions/opportunities to ask questions and get clarification on our expectations
- Compensation details



PI: Brenton Jackson, BYU IP&T Graduate Student
bdjackson5@gmail.com | 703-303-6704
Supervisors: Bryant Jensen, PhD, BYU Teacher Education
Royce Kimmons, PhD, BYU IP&T

Participant Information Sheet:
Formative Feedback on Equitable Teaching Book Chapters

You are being invited to assist Brigham Young University (BYU) by evaluating the effectiveness of two book chapters related to equitable teaching. These are the first two chapters of a free, open online book being created by BYU to help teachers learn about and improve sociocultural interactions with students. These chapters focus on adapting lesson content and language use to better serve students. Results of this phase of the study on the book are not intended for publication—your feedback will be used formatively to help us improve the book as it continues to be developed. The timeframe for this study is May–June 2020. All communication and interviews will happen online because of COVID-19.

Participation in this formative evaluation is entirely voluntary. If you decide to participate, you would be compensated for your time (details below). Please read the rest of this document before you make your decision.

The study has three stages. We anticipate total time for participants will be about 3 hours over the course of a month.

Part 1: Studying the Chapters (1-1.5 hours)

We will send you instructions to access the book online and assign you a chapter to study (you can study both chapters if you like, but your participation only requires one). You will have 1-2 weeks to review the chapter.

Part 2: Complete the Survey (30-45 minutes)

After completing your review of the chapter(s), you will access a survey on Google forms that will ask you some questions about what you learned from the material.

Part 3: Participate in an Interview (45 minutes-1 hour)

After completing the survey, we will reach out to schedule an interview. These may be solo or group interviews, depending on whether other teachers from your school are also participating. The purpose of the interview is to discuss your experience and perceptions of the chapter(s) more in-depth, including questions related to its *practicality*. One or two members of the BYU team will interview you. We anticipate only having one (1) interview per participant.

All communication was distributed to teachers via email. The actual documents can be found in Implementation Instruments.

Survey Implementation

Participants were sent a Google Form that asked them questions about their teaching experience and assessed what they learned about the CASI dimensions. This survey was accessible on any device with internet connection and teachers reported no difficulties. Approximate time to

completion was 45-60 minutes. A link to the Google survey can be found in Assessment Instruments.

Interview Implementation

We initially planned to conduct group interviews in person, but COVID-19 forced us to move the interviews to Zoom, which removed any need to schedule locations. Grade level groups of 2-4 teachers joined the Zoom call at their appointed times. They were briefed on the purpose of the interview and each group was given the same background information on the vision for the CASI book and what we expected of them. Interviews lasted roughly 60 minutes for all groups. We obtained permission from all participants to record the interviews through Zoom; following the interviews, Zoom auto-generated transcripts and audio/video recordings which we used for evaluation.

A link to the interview protocol can be found in Assessment Instruments.

Post-Interview Survey

Participants were sent a 5-minute follow-up Google survey after their interviews. The survey gave them an opportunity to share additional insights, give us advice on the project, and rate their interest in working with us on the project in the future. It also asked them for addresses to mail the compensation. A link to the Google survey can be found in Assessment instruments.

Compensation

All nine participants were each compensated $100 total in the form of VISA gift cards for their participation. The gift cards were mailed to the addresses participants provided. Funding for the gift cards was drawn from BYU IP&T research accounts.

Assessment and Evaluation

Criteria

My evaluation efforts were guided by criteria from Dr. Jensen and Dr. Kimmons. We were particularly interested in measuring the results against practicality theory—recognizability, relevance, and feasibility.

Our primary criteria were these:

- Do the chapters communicate declarative knowledge? (Learning Goal 1, 2)
- Do the chapters prepare teachers to successfully evaluate teaching examples using the CASI indicators? (Learning Goal 3)
- Do the chapters prepare teachers to adapt lesson plans for CASI indicators? (Learning Goal 4)
- In the teachers' view, do the chapters demonstrate practicality? (Learning Goal 5)

Procedures

Formative evaluation judges the strengths and weaknesses of the instruction while it is developing; summative evaluation judges the extent to which instructional outcomes were attained. In this view, evaluations of our brief pilot were both formative and summative, because this stage of the project aims both to *prove* and *improve*. Summative evaluations helped us establish whether our teachers attained the learning goals, and whether the chapters exhibited practicality. Yet the CASI book is a work in progress, and the chapters are a work in progress—both will continuously improve throughout several years via collaboration with practicing teachers. In this light, our evaluations are more productively seen as formative.

In May 2020, we reached out to a small sample of Utah teachers that had previously worked with Dr. Jensen on CASI development, requesting their help with a pilot of Chapter 1 (Language Use) and Chapter 2 (Content Connections). Nine (9) teachers, from three grade level groups at three schools were chosen for participation.

From May 5–18, teachers participated in two stages of pilot assessment:

1. **May 5–May 13:** teachers were given 1.5 weeks to review their assigned chapter and complete a 45 minute survey.
2. **May 13–18:** each grade level group (3 total) participated in a semi-structured focus group/interview over Zoom, conducted by myself.

Survey Overview

The closed-book survey, which lasted approximately 45-60 minutes, measured teachers' learning on **Goals 1–4.** (Note: you can view the full Google survey here.) The survey had four parts:

1. **Part 1:** Brief demographic survey to help use get to know your experience (~5 minutes)
2. **Part 2:** Two (2) short-answer questions about the definition and importance of a CASI dimension. (~5 minutes)
3. **Part 3:** Read a description of a teaching scenario and score it according to Language Use or Content Connections indicators (~10-15 minutes)

4. **Part 4:** Read a lesson plan (provided) and write your ideas for how it could be adapted to better incorporate Language Use or Content Connections (~10-15 minutes).

Interview Overview

Following completion of the surveys, each grade level group was invited to participate in a 1-hour Zoom interview. The primary purpose of the interview was to address **Learning Goal 5: discuss the practicality of the CASI book** (evidenced by recognizability, relevance, and feasibility/cost). (Note: you can view the full interview protocol here or here.)

During the interview, I first read all participants the same "Introduction to Cultural Aspects of Teaching." This put them on equal ground in terms of understanding the purpose and goals of our CASI book project, as well as generic vs. cultural dimensions of teaching.

Then, over the course of an hour, participants responded to questions like the following:

Recognizable

1. *Did the idea of (Language Use/Content Connections) seem familiar or new to you? In what way?*
2. *Has language use in the classroom ever been a concern for you? How so? How did you respond?*
3. *Has connecting lesson content to the lives of your diverse students ever been a concern for you? How so? How did you respond?*

Relevant

1. *What has your job as a teacher already taught you about (LU/CC) before studying this chapter?*
2. *Specific examples/experiences of how (LU/CC) affects learning outcomes for diverse students?*
3. *Do you think (LU/CC) is an issue that other teachers or administrators at your school care about? Or would support you working on?*

Feasible

1. *Let's say we asked you to begin practicing (LU/CC) in your classroom next week. Do you feel prepared to do that? How would you do it? What knowledge or resources do you lack, if any?*
2. *What costs currently make it difficult for you (or teachers in general) from practicing (LU/CC) in the classroom?* (e.g., time, training, financial, political costs)
3. *What costs would make it difficult to practice (LU/CC) moving forward?*

Book UX

1. *Did you have any difficulty accessing the book? Did you view it online or as a PDF?*
2. *What do you think you'll remember most about this book in a month? What is the primary benefit you get from the book?*
3. *What did you think of the comics? Would you prefer videos instead, or neither/both?*

Analysis Details

The numerical data from the survey (e.g., teachers' numerical scoring of scenarios) were evaluated quantitatively, while the teachers' written responses and lesson adaptations were evaluated qualitatively.

Following transcription, I coded the interviews and extracted relevant themes that had implications for the book's future development. These themes were aggregated in different ways, depending on the audience—an actionable summary of design changes (overview and details) for the development team, and the full report for Dr. Jensen and Dr. Kimmons' future research and development.

Evaluation Results

1. Do the chapters communicate declarative knowledge?

Learning Goal: Accurately define the given dimension.

All nine teachers successfully defined their CASI dimension (Language Use or Content Connections). Of these, 6 gave **"very good"** definitions:

> *"Language Use refers to what languages are being utilized in the classroom. Typically, most classrooms discourage minority language and insist on English being spoken but this chapter talked about the myriad of benefits for students socially and academically if they feel comfortable to use their "everyday language" in the classroom regularly. Students are able to merge their out-of-school lives with their school experiences and feel more valued and heard in class. Our job as the teacher is to encourage their everyday languages by praising them or reinforcing rules in their languages and create an environment where they feel comfortable using their everyday language with their peers."*
>
> – Teacher 7, Language Use

> *"The CASI measures how well an educator is able to connect students' everyday life experiences and the educator's personal everyday life experiences to the content objective. The purpose of the personal connections is to help anchor the students' learning to things that are important and relevant to them."*
>
> – Teacher 3, Content Connections

while 3 gave **"good"** definitions:

> *"It is a tool to help teachers recognize how effectively they are engaging students of all cultural backgrounds in the content of each lesson."*
>
> – Teacher 9, Language Use

> *"Teaching class content through personal life experiences. Connect students to class content by using their everyday life experiences."*
>
> – Teacher 1, Content Connections

Learning Goal: Discuss the benefits and challenges of the dimension.

All nine teachers indicated that they believe their CASI dimension would be beneficial for their students. Of these, 6 were **“highly supportive”**:

> *“I think applying Language Use practices would be beneficial for my students because it helps them to make connections both academically and socially. Academically, Language Use practices help students make connections using root words, prefixes, and suffixes to learn vocabulary words; also, it allows students to work through complex ideas either using home language or cultural experiences. Socially, it allows students to connect to others, make friends, and establish a positive relationship between teacher/student/parent.”*
>
> – Teacher 9, Language Use

> *“Absolutely! First of all, very few of my students are being raised in middle class white homes, and the culture of the education system is unfamiliar or uncomfortable for many of their families. In addition, I do not share many facets of their culture, so helping connect their schema with my schema and with content will help everyone.”*
>
> – Teacher 4, Content Connections

while 3 were **“supportive”**:

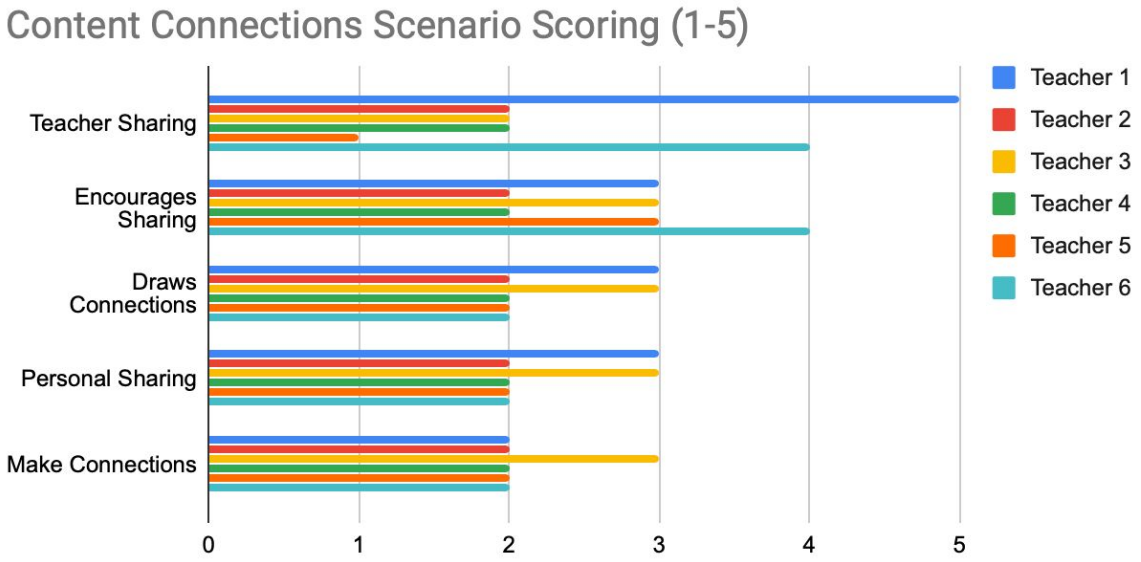
> *“It could be beneficial to students because if we (teachers) relate class content to their everyday's life, they will much easier grasp the classroom concept.*
> *The challenge though, could be if all students would have the same life experience (background).”*
>
> – Teacher 1, a dual-language teacher with majority Hispanic students

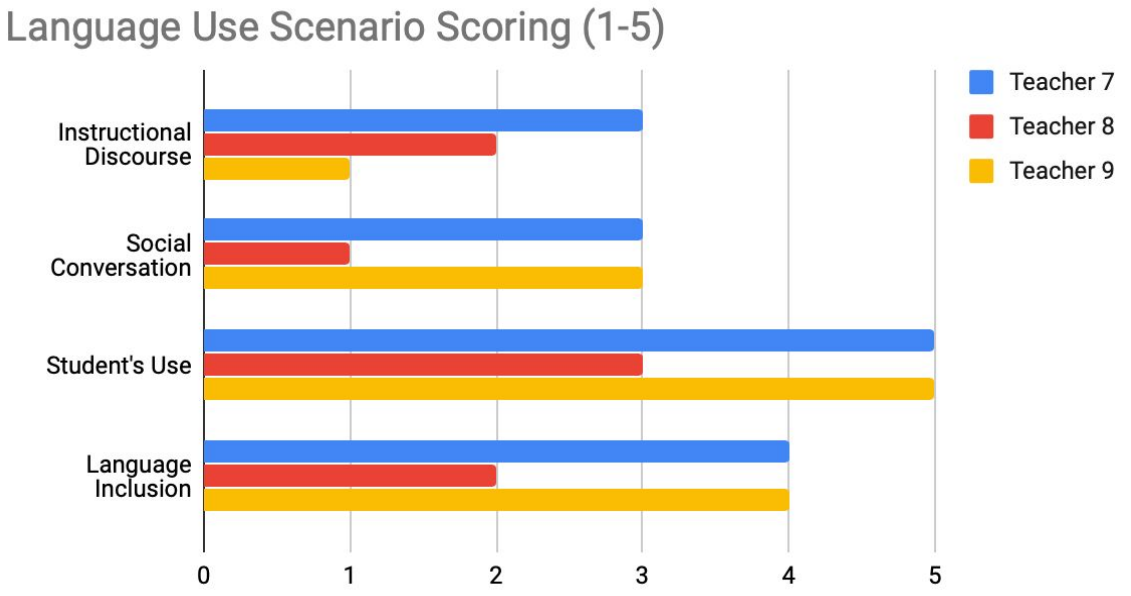
> *“I think that any time you are able to find ways to make learning meaningful and relevant to students it is beneficial.”*
>
> – Teacher 3, Content Connections

2. Do the chapters prepare teachers to successfully evaluate teaching examples using the CASI indicators?

Learning Goal: Use indicators to score a written teaching scenario.

The charts below show how each teacher scored their scenario for each indicator (1–5). When the bars line up, that indicates teachers gave the same score for that indicator.





Teachers also provided **justifications** for the scores they gave. Here's an example for Content Connections from Teacher 2, who happened to also score 2's across the board:

Teacher Sharing	2	*There was only one instance of Mr. Liu sharing information about himself in the example of the family tree. There was no reference back to the family tree or Mr. Liu personally after that.*
Encourages Sharing	2	*Mr. Liu had students share with each other at the beginning of the lesson about what they knew about family trees. Even though Sarah at the end shared about her divorced parents, that was not because Mr. Liu encouraged her to share, but rather part of Sarah's explanation. Mr. Liu did acknowledge the sharing, but I think to build the relationship, he could have taken a quick second and said something to affirm the feelings of a student who has divorced parents. Also, there was little to no follow-up questions.*
Draws Connections	2	*Mr. Liu did not draw on the students' hobbies and interests into this lesson. He brought in a family tree of his own to share with the class. It may have linked with some of his students (as evidenced by the portion of the students who knew what it was vs. those that didn't). However, a HUGE thing that I think Mr. Liu did that was dangerous is this has the potential to damage relationships with students because he says, "It shows how we are related to those we call our family." In the traditional sense, yes. However, we have students who do not come from traditional families and these family trees (in the traditional sense) would not necessarily include the student - so it would depend if there was additional discussion surrounding how a family tree was organized to see if it would hurt a child's feelings.*
Personal Sharing	2	*Students who understood the concept of family trees may have shared something personal with the other student. But in the whole group setting, there wasn't personal sharing. There was defining of a family tree. Also, Sarah at the end did end up sharing about her personal family relationships, however, this was not orchestrated by Mr. Liu. It seems that Sarah just happened to include that in the connection that she made personally.*
Makes Connections	2	*The only student based on the reading that I saw make the actual connection between the hierarchy, the family tree, and themselves was Sarah. There is no other evidence that any students made that connection.*

- Teacher 2, Content Connections

3. Do the chapters prepare teachers to adapt lesson plans for CASI indicators?

Learning Goal: Generate ideas for adjusting/adapting a lesson plan to better integrate the CASI indicators.

We provided teachers with a sample lesson plan for the same scenario they scored in the previous section and asked them to adapt it for better LU/CC integration. Here are a few examples:

> *I think that Mr. Liu had the right idea on how to begin presenting the concept of hierarchy to the class. I think the execution is where it went a little off track. Students could be able to make a mini family tree using the people who take care of them and the people at home to include all students in understanding a hierarchy. He could still talk about the way that he is set up to being in the teacher sharing.*

Later on in the lesson, Mr. Liu should have helped students draw connections between the hierarchies created and the personal hierarchies that each student has. This would hopefully solidify the concept of a hierarchy in general to help students apply that concept not just in math, but across other subject areas as well.
The latter part of the lesson plan has no real plan for student personal sharing. While students are sharing about the idea of a family tree, students should be able to talk about their own personal families and how that hierarchy is set up for them. Then, after discussing the hierarchy of shapes, a few questions about how the two (family tree vs. shapes) are similar and different.

– Teacher 2, Content Connections

In days leading up to this lesson, I would ask students to talk with family members about their own families. Instruct them to discuss, aunts, uncles, cousins, grandparents etc. Ask each family to complete a family tree going back 2-3 generations. Prior to the classification activity, have students share and discuss their individual trees. Ask some guiding questions such as why is that even though you and your cousin have the same grandparents, you do not share the same line on the tree?
After the whole group discussion, ask students (either in groups or individually) to make their own personal observations or connections between the two hierarchies.

– Teacher 6, Content Connections

- The teacher could choose a few key vocabulary words to post in both English and Spanish. Words could include desert, climate, cactus and rattlesnake. This would help the teacher score higher on the Instructional Discourse portion of Language Use. In the present lesson plan she doesn't include hardly any Spanish in her teaching about the desert.
- For the Language Inclusion score, I would have the teacher repeat the Spanish words that students offered up in the whole group lesson to show students that she likes hearing Spanish and is interested in learning words and phrases.
- To incorporate better Language Use practices, the teacher could show a video of the Arizona desert that uses Spanish with lots of images and descriptions. Or one group could watch that video if it referred to their section (plants for instance) and share about it later.
- Overall, I think this teacher is doing a great job incorporating everyday language in her classroom.

– Teacher 7, Language Use

4. In the teachers' view, do the chapters demonstrate practicality?

Learning Goal: Meaningfully discuss the practicality of the resource (recognizability, relevance, feasibility).

This criteria was met by three 60-minute interviews with teachers where we discussed practicality at length. All of the relevant quotes cannot be added here, but representative quotes are included. Full coverage of the coded interview responses can be found in Evaluation Instruments and Reports.

What am I looking for when I say "practicality"? Practicality theory asserts that "teachers will only consider a change proposal as practical if it is accompanied by cost-effective procedures for design and enactment while simultaneously realizing teachers' other important goals" (Janssen, Westbroek, & Doyle, 2014, p. 181).

Specifically, change proposals like equitable teaching practices need to demonstrate recognizability, relevance, and feasibility:

- Recognizability: do recognizable classroom practices accompany the proposal?
- Relevance: does it fit the circumstances in which teachers work? (e.g., will it make it harder to cover content, demand too much individualized attention, strain relationships, complicate assessment, etc.)
- Feasibility: does it seem achievable within the teacher's limited time, knowledge, or resources?

For the following examples, "New" means 1–5 years, "Experienced" 6-15 years, "Veteran" 16+ years.

Recognizability

> *I always like it when research validates what I have seen in my classroom work. Like everything that I read, when I was reading it, I was like, yeah, that sounds about right. So I just like seeing that research also shows that my gut instinct or my experience is consistent with that.*
>
> - Teacher 9, Language Use (Experienced)

> *For me it seemed new, in the sense that no one necessarily teaches you to look at your classroom in that lens. Typically, we're looking at "okay, what curriculum, are we teaching, are we making sure that we are understanding and moving forward?" But we don't typically talk about, "okay, what kind of cultures have you brought into your classroom, just by having the particular students you have?" So I had a lot of fun looking at it that way and thinking when I during my teaching thought, "Okay, what can I really do for those Spanish speakers that are really struggling, that only know a couple basic phrases?" And trying to maneuver that by myself without feeling like there was a lot of other support in other courses or just in day to day teaching.*
>
> - Teacher 7, Language Use (New)

> *I think to me that it sounded familiar. I think that some of the things that it talked about. I'm like, oh, they are practices that like you could just be doing already. But didn't realize that it fit into that category, that this is what it was. So yeah, so I think for me it would be familiar.*
>
> - Teacher 8, Language Use (Experienced)

> *[Teacher 2] and I talked a little bit about it as well being good teaching. You know, a lot of what we read are things that we learn and the years we've put in teaching that making things relevant is going to help students understand it better and I think as I work more with these diverse populations, I start to realize exactly how much they need that connection. They need the connection to the content because as far as they're concerned, some of the things we're talking about might be the Moon. I mean, you know, as far as their experiences are. And they're so different from any experiences that we bring to the table.So finding that connection to relevance is absolutely critical. I think that the chapter was very easy to read. I think that the examples were very easy to follow. I don't know... the trick being, you know, we're a group of experienced teachers. I've been teaching for 19 years, and making connections with students is my biggest bandwagon. And trying to bring those connections to them as well into the content... So I don't know from the lens of a first or second year teacher who really would need this. I don't know how I would have... like if it would have been as friendly or clear as it was to me after 19 years of teaching.*
>
> - Teacher 4, Content Connections (Veteran)

The first one that comes to mind is the teacher who showed the video about Amazon and how that prompted her for, you know, regeneration and recycling and everything. And there was value in showing the video, but how much more value was it in the different things that she brought into it? When I was reading it, to me, the most valuable sample is when she started engaging the kids and having them look at the pictures and ask questions and really generate a lot of interest. And I just was thinking like, "Why isn't there a discussion in here about what makes one valuable, but another one more valuable, in a situation? Because I thought that there was just a goldmine of opportunities and that that particular one was the first one that struck me.

- Teacher 3, Content Connections (Veteran)

Relevance

Teacher 1: *I'm a true believer and I'm sure the rest of us are. When the students actually identify themselves with something that you're teaching, they jump in, like, really, they're really engaged.*
Teacher 4: *And I can speak to that as well; prior to this year I was the English half of dual and I was the outsider culturally. There is so much that they shared with [Teacher 1] culturally that I did not get. And I think that that highlights the importance of teachers, especially like myself, the middle aged white woman... I have* one *student in my class who looks like me, who has a similar background to me, and there's there's this need to have awareness of what I don't know because if you just are like "I'm willing to be accepting of everything" that's great, but you also need to realize like when you're having these conversations, what are the kids not going to know? And for example with* posadas *as you're talking about it, what about the one kid in your class who's Caucasian, right? Does that kid have any idea what's going on? Well, those are all of my kids every day, that don't have any idea what's going on in making that connection right. Which just again, that's why it's so important.*
Teacher 1: *And so, and that's when we all jumped in and explained to [the Caucasian student] what we're talking about. And so he was very interested. He says, "Oh, that's cool!" And then he started sharing what he does. Instead of* posada*, he started sharing what he did differently during those days.*
Teacher 4: *That comparison is what it talks about, right, that importance in addressing what's the same, what's different. But again,* the teachers who need this the most are also the ones who don't necessarily recognize that they need it.

- Teacher 1 and 4, Content Connections (Experienced and Veteran)

So you're going to get a really good balance with this, because when we leave teacher ed programs, we're kind of left with this, "you're going to be the experts, you're going to know everything (...) you're going in there to teach children who don't know anything." So you get to temper that with this book, to say, "Okay, you know everything about the content, but what you don't know everything about your students.

- Teacher 4, Content Connections (Veteran)

I did resonate a little bit with the experience of that teacher who had started saying she had tried to use a couple phrases, but she wasn't super fluent or you know, she doesn't look like someone who would speak Spanish. And I think a lot of teachers, at least in my ideas or perspectives, would have that worry, that they would come across as trying to be fake, like trying to be someone in their Spanish culture that's really not. But it was cool to see at least in the reading that a lot of these students, I mean, they're young and so they just resonate with that they like hearing things they're used to. They like seeing their teacher, try to be a part of their life more than just at school. But I think validating that experience would be helpful for some teachers that maybe don't feel like they can say anything in another language because they haven't lived in that closer. They don't know as much as the students do.

- Teacher 7, Language Use (New)

I was just thinking that it just had a lot to do with the students feeling like they can contribute in the classroom. And I guess being willing to take the risk to try. And they're the ones who make the most growth, I feel like, especially with their language, when they feel like, "You know what, this is a safe space for me to go ahead and practice the things that I'm learning and to try it." I feel like I've seen the growth and like academic aptitude as they feel that I can do this. And I feel like this is a good time to try it. And I'm not going to worry about whatever else is going on. I'm just going to go ahead and put myself out there and try it." (...) So I guess, more of like the relationship thing that you build with them and with your class as a whole that helps them feel like they can go ahead and try. And even if they make a mistake that there are things in place to help them, like teachers to help them, other students in the class too would be like, "Oh, actually no, it kind of goes like this." And so they're willing to walk them through the process too, and they're willing to take that feedback and then try it themselves.

- Teacher 8, Language Use (Experienced)

Feasibility

I didn't feel like it was going to take a lot, I mean you bring up costs, time, coming up with the ideas a little bit. But I don't think... When you initially do it, it's going to take a bit of time to come up with the brainstorming ideas like [Teacher 6] mentioned, you know, come up with specific examples, but I think once you have it down, it has just become part of our teaching practices. So I don't know, that's just me. Like I said, you know, when I read the examples, I was like, "Oh, I could do that if I just did this a little bit more. I could make that strong connection or have the students make that connection."

- Teacher 5, Content Connections (Veteran)

I love the teacher examples. Having more... I mean, I know I said a list, but having more of those is great because it helps me start thinking of how I can do it in my classroom.

- Teacher 6, Content Connections (Experienced)

I think just like [Teacher 9] was saying, there's so many things that we can always be improving on as a teacher, so it's hard to say what's most important. I feel like each week we did have a different thing that's most important. But I think if it stemmed from "okay let's work on literacy. Here's one component language use that could really support our students. Or here's all the content, if the students aren't understanding the different forms of rock because they've never been to Utah, they've never seen these things before, how can we connect it?" Maybe that would then help it look more important to help other teachers see it's value.

- Teacher 7, Language Use (New)

It's not just, I need to do this in every lesson. I think it's "this is one more lens that I need to look at my lessons through, even if I'm only doing this once a week. It's one more thing." And I think that's a big cost.

- Teacher 4, Content Connections (Veteran)

I think, for sure, [experience] can be a cost. That's one of my concerns when we start talking about equity. I start thinking about restorative practices and we start having, you know, these really deep, meaningful conversations with kids, which I am absolutely in favor of, but it takes training. It takes experience. Questions come up, conversations come up, that can really kind of take someone aback, sometimes, or if you don't have a certain level of background experience and knowledge about somebody's culture and their upbringing, answering those questions and going into some of those areas... It could come at a real cost for the students too. And so I think that there needs to be... this kind of goes back to my "having the conversation" stuff. There needs to

> *be a lot of practice in the pre-service classroom, or in a Professional Development kind of place, where teachers get in the weeds a little bit and help each other, figure out how to get out in a way that's safe for the students.*
>
> - Teacher 3, Content Connections (Veteran)

> *Yeah, and you know piggybacking on that though, [Teacher 3]'s right... especially when we think about cultural relevance. And we've been talking about this, this has been like a huge focus for the last couple of years, but it's so vague that nobody knows what [cultural relevance] means and nobody can define that. People just kind of do this smile and nod, "Oh yeah, oh yeah, uh huh, uh huh..." And that's one thing I think I appreciate about this chapter we did. This is actually a practical way to look at it and say, "Here's how we can analyze what's happening in this classroom to make these connections." And that is going to be huge with cultural relevance. I think that this is actually... providing a path that I feel like has been absent.*
>
> - Teacher 4, Content Connections (Veteran)

Evaluation Conclusions

At a high level, results from the pilot indicate that the chapters did their job well. Teachers were clearly able to define and justify Language Use and Content Connections (albeit with different levels of fidelity). By my interpretation, all of the learning goals were achieved.

Teachers were able to score scenarios *fairly* consistently, which is impressive considering how little time they had spent with the indicator system. Why they are by no means experts after 3 hours of study, teachers demonstrated by their survey responses that they could distinguish between indicators and had ideas for how to better implement Language Use and Content Connections in a classroom scenario. With a little more practice and exposure these teachers would certainly be able to critique examples of their own and each others' teaching.

Interviews supported the conclusion that the chapters demonstrate recognizability, relevance, and feasibility (with some caveats, which will be covered later). For experienced and veteran teachers, the concepts felt "familiar" and validated their classroom experience, while providing useful ways to talk about and measure cultural dimensions of practice that have historically been "so vague that nobody knows what [they] mean." For new teachers, the concepts felt novel, yet useful—one of *many* things they have to learn, yet also something that could potentially make the rest of their classroom work easier and more meaningful.

Via the interviews, teachers also provided extremely helpful suggestions for changes, adaptations, features to add, and resources to develop—like editing certain examples to be more realistic, increasing emphasis on intentionality and avoiding teacher burnout, adding explanations for our example scoring, and creating a database of teacher videos depicting real, messy attempts to do Language Use and Content Connections in the classroom. These helpful suggestions are covered in more detail in Appendix K.

Limitations

The pilot had several limitations that should temper the conclusions we draw as a design team. First, this pilot did not measure actual performance in the classroom; it rose to the level of

theoretical knowledge, but not practical knowledge. Believing that equitable teaching matters is important, but it doesn't necessarily equate with changed sociocultural interactions in the classroom, which is the whole point of the CASI and this book. The data we gathered is an important step in the right direction, but future pilots should aim for measurements of practice.

One major variability across the sample was years of experience. Veteran teachers felt more comfortable with the idea of adapting their lessons for more equitable interactions, but they expressed concern that new teachers would feel overwhelmed by it. While the new teachers confirmed that possibility, they also believed that they were capable of making small changes (adjusting questions, getting to know students better) that would increase equity and improve the rest of their work.

Finally, several teachers were concerned about *reach*. All nine self-identified as "believers" in equitable teaching (though there was clear variation in their beliefs), and several wondered whether the CASI book would be able to "reach the teachers who need it most." While reach is an important consideration, we observed a trend that made those doubts seem less critical.

As part of our training, the design team observed and scored video segments of many Utah teachers, which were previously recorded by Dr. Jensen for a formative study as the CASI was being developed. Six of our nine teachers were represented in the videos we scored, teaching normal lessons before they knew anything about CASI-specific indicators. All six of these teachers identified as "believers" in equitable teaching during our Pilot—yet their previous CASI scores were only marginally higher than or equal to other teachers in the sample. While dispositions are critical, believing in equity doesn't automatically yield higher CASI scores.

This does not mean our teachers were being hypocritical when they expressed doubt about the CASI book "reaching the ones who need it most." In fact, they make an important point: not all teachers believe equity is an issue in K-6 classrooms. But our analysis suggests that there is room for *everyone* (even "believers") to improve when it comes to equitable teaching.

Design Knowledge and Reflection

Documenting the design knowledge for future designers to use is not just a hypothetical exercise in this case—there *will* be future teams working on future chapters of the CASI book. So it is important for me to synthesize and distill what worked and what didn't, both for this project and others I work on in the future. The language of this section is directed toward students working on future CASI chapters.

Charting a Course through Ambiguity

This project began and continues under ambiguous conditions. When we first started brainstorming the chapter structure, there were almost limitless possibilities and directions we could go. Responding to those possibilities and charting a course as a team of non-expert students was challenging but rewarding. A few key practices helped us navigate the ambiguity.

Analyze, Design, Develop, Repeat

Not being subject matter experts made it hard to predict the end from the beginning. Our process of writing the first two CASI chapters didn't divide neatly into a training period, a designing period, a developing period, and a testing period. At the beginning we had to spend considerable time scoring videos and debating the CASI so that we could get a basic handle on the material, but that training didn't end once we started writing. Rather, we found ourselves in a cycle:

- Train with the CASI, scoring videos and debating our scores
- Brainstorm and design prototypes together (outlining sections or sketching illustrations)
- Develop sections individually
- Pitch them to Dr. Jensen and the rest of the team. (these meetings were important both to get approval for features *and* to discuss the concepts of the CASI with Dr. Jensen, who is the subject matter expert)
- Reorient designs/mockups with our new understanding of the CASI and client expectations.
- Repeat!

This approach was more agile and natural than a waterfall method. Given the creative license Dr. Jensen gave us, this process fit the ambiguity of the project better than trying to plan out the entire book before we started writing it. In terms of instructional design models, our process was more "SAM" than ADDIE.

Set Goals, Break Down Tasks, Talk Often

Early on I was very loose with project management and setting goals, and it took us 6 months to write the first chapter. After implementing more deliberate weekly goal setting, a product backlog, and better communication, we cut the development time for the second chapter in half—3 months.

With additional resources (like more writers or illustrators, or teachers working with the team), the development time for chapters could be even faster. But those extra hands make the project management techniques even more crucial.

Writing a Chapter: 10 Do's and Don'ts

Advice for the future design team, combining insights from the past year.

	Do		Don't
✔️	Train with the CASI early and often. Our favorite method: score teaching videos individually, then discuss together.	❌	Read over the dimension a few times and assume you know it, or stop training with the CASI once you start writing.
✔️	Start writing as soon as you can. It will help you learn and identify questions and misunderstandings.	❌	Wait to be "perfect" at the CASI before you start contributing to development.
✔️	Finish the scenarios first so that the illustrator can begin working on them.	❌	Keep the illustrator(s) waiting on the writers.
✔️	Break down the chapter into smaller, week-sized tasks, possibly in the form of a product backlog. Write them down (we used Trello). Then divide and conquer and report back *often* (throughout the week).	❌	Try to all write the same sections together. Take on huge tasks ("I'm going to write Scenario Version 1!) without breaking them down.
✔️	Communicate throughout the week.	❌	Wait until the weekly meeting to communicate what you're working on.
✔️	Set a firm deadline (I believe 2.5 months per chapter is a good stretch goal, depending on team size). Then work backwards and plan weeks.	❌	Say "we'll see how it goes" and let weeks slip by without progress or communication.
✔️	Send small features to Dr. Jensen and the rest of the team *frequently* for approval and advice (e.g., pitching a few options for a Common Core standard before you start outlining)	❌	Write huge sections of the chapter before asking for approval (e.g., picking a standard and writing a scenario or starting illustrations before you pitch it to the team)
✔️	Revise past chapters/sections based on new information and learning. Think divergently: how could you do this differently?	❌	Treat past chapters and designs as if they're set in stone.
✔️	Take notes—often—on scenario ideas, useful resources, and especially CASI questions or misunderstandings.	❌	Tell yourself "I'll remember that idea, question, useful video, podcast, or website for the next chapter."
✔️	Design for real teachers.	❌	Treat it like a school project.

Working with Teachers: A Few Recommendations

The final of the 10 “Do’s” (above) says “Design for real teachers.” What does that mean for future CASI teams? What does designing for and *with* teachers look like? Here are a few notes, based on insights from the evaluation and design process.

1. Teachers are capable.

If there’s one thing the evaluation interviews taught me, it is that a lot of teachers in this area are thinking deeply about equity in education. They had insightful answers to my questions and offered many constructive recommendations (which you can read here). Because of this evidence, I’d recommend that we look at K-6 teachers as capable design partners in the future. While they are busy, they have the skills and insight to provide us with invaluable guidance on future chapters. Involving teachers will require more diligent project management, but it will be worth it. Some ideas for how to do this follow. (Note: how to compensate teachers for their involvement, including more transient/short-term consultation, is a potential snag that should be discussed as a team).

2. Send them dimensions and ask for lesson/scenario ideas.

“This is what we’re writing the next chapter about. Do you have ideas for lessons that would work well with these indicators?” Teachers may be able to think of more realistic examples or scenarios than we can.

3. Send them lesson/scenario ideas and ask for feedback.

“Here’s a scenario we developed to model _____ indicator/dimension. What do you think?”

4. Send them chapter or section drafts and ask for feedback.

“Here’s a section of the new chapter. Would you mind reviewing it and making notes on what works and what doesn’t? We’d love to get your feedback.”

5. Ask teachers to write down some of their experiences or FAQs pertaining to the given dimension or indicator.

“Have you ever had an experience with _____ dimension in your classroom? If so, could you write a paragraph about it that would be instructive to other teachers trying to practice this dimension and send it our way?”

6. After having teachers study the chapter, ask them to plan and record a lesson of themselves trying out the dimension in the classroom.

Take the recordings, sort through them, find good examples and relevant clips, then add them to the chapter (must negotiate privacy/permissions here). We could also create a database of videos for reference. Real classroom videos was a feature that multiple teachers requested during the interviews.

Personal Reflection

Developing an instructional experience for real teachers changed my perspective on design empathy. Though I already knew it in theory, this project helped me understand that instructional design innovations fail so often because they are, perhaps unintentionally, more about the designer than the learner.

Design empathy doesn't come naturally, especially if you are a graduate (or undergraduate) student trying to promote equitable interactions in a classroom you have never taught in. On top of that, this project is unique because the book is being written primarily by a team of equity non-experts without a clear, scripted direction. That is a big responsibility, but it also unexpectedly works to our advantage—we develop empathy for our teacher audience (who are also non-experts in equitable teaching) through the process of writing a book for them. Our confusion was their confusion; our learning, hopefully, will be theirs as well.

The pilot demonstrated that teachers can and will think deeply about these issues. Several of the critiques they offered involved us not dealing with the complexity of practice—writing unrealistic scenarios, not addressing teacher burnout sufficiently, failing to emphasize dispositions and intentions. None of these were huge failures that derailed a chapter, but going the extra mile to address complexity and nuance may be key to earning our readers' trust moving forward. If we can truly adopt teachers as partners in the design process and demonstrate that we empathize with their daily constraints through our writing, the CASI book will have a stronger impact.

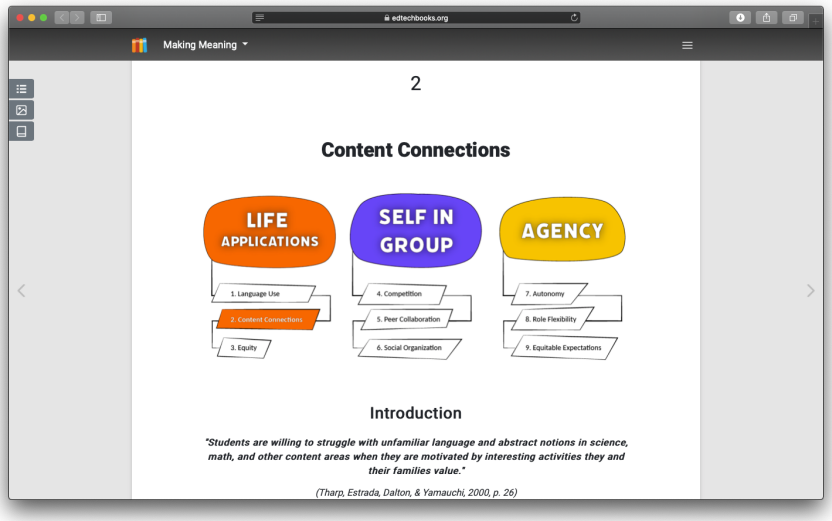
Writing two book chapters over the course of a year may seem like a slow development cycle, but I believe we have laid the groundwork for a very valuable resource. Perhaps one of our pilot teachers said it best:

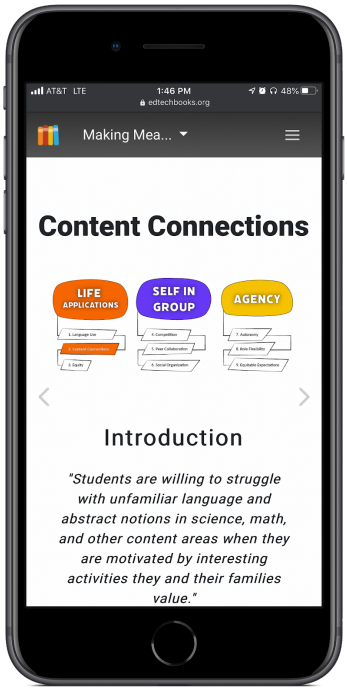
> *This is going to be huge with cultural relevance. I think that this is actually providing a path that I feel has been absent, you know, because we are all kind of like, "We're just going to have to figure this out on our own." Because people keep saying "Okay cultural relevance, cultural proficiency," and everybody's like, "I don't know what that means." So I just want to say that it's kind of exciting to see that. "Okay. This is what I've been doing, it makes sense. But this is the why, and that* really *makes sense."*

Appendix A: Actual Product

The book can be accessed at https://edtechbooks.org/equitable_teaching. There you will see the completed chapters so far (Introduction, Language Use, Content Connections) as well as any chapters that we write in the future!

EdTechBooks' design is mobile-first, so you can comfortably read the chapters on either mobile device or desktop.





Appendix B: Product Walkthrough

You can access a 3-minute video walkthrough of “Making Meaning” here.

Appendix C: Learner Analysis

We are building this educational product to help practicing K-6 teachers learn about and apply the CASI in concrete, practical ways. I based my understanding of their characteristics primarily on four sources of learner analysis data:

1. **The client's description** of target teacher learners, based on his many years of collaboration with local educators: teachers that are most likely to relate to the issues we present and apply the concepts they learn in daily practice, based on their circumstances and willingness to try.
2. **Previous data sets,** gathered through surveys given to local teachers in Title I schools, that contain information about our teacher learners work experience, education, demographics, and beliefs about issues of educational equity and meaningful teaching. While we may not work with the specific teachers who responded to the surveys for this project, we believe our target teacher learners are likely represented by the aggregate of the survey responses.
3. **A database of observational videos** of the aforementioned teachers teaching in their classrooms, including audio and video of them and their students, which I and my team have spent many hours watching, coding, and rating according to CASI markers.
4. **A database of "master codes,"** created by trained raters who observed and rated the same observational videos mentioned. These master codes provide a benchmark for our own independent practice ratings of the videos, allowing us to calibrate our perceptions of how Utah teachers are normally performing on CASI indicators in their day-to-day practice.

Based on these data sources, our teacher learners share the following characteristics:

- They are teachers in Title I schools
- They are teaching between K-6 grades in Utah districts reasonably close to BYU
- They teach and interact with students from a variety of races/ethnicities and cultures
- They are not (currently) integrating CASI principles to a high degree in their teaching practice
- They are willing to help us pilot and refine our resource

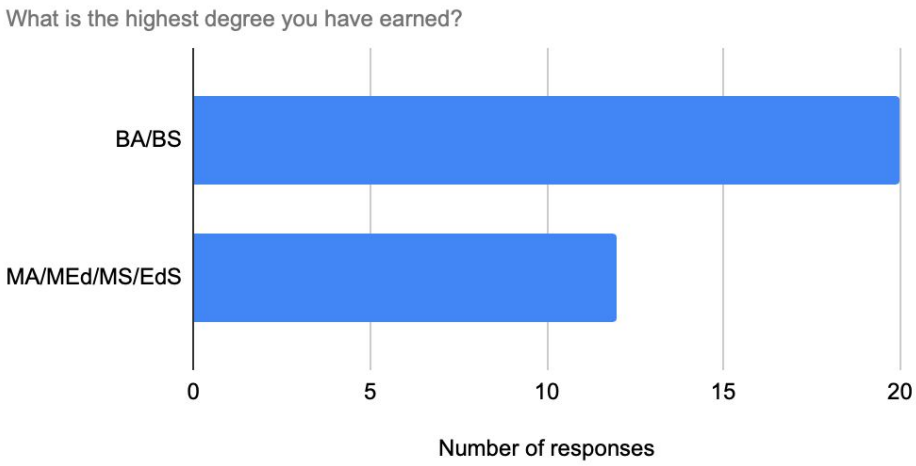
Based on these data sources, our teacher learners may differ on the following characteristics:

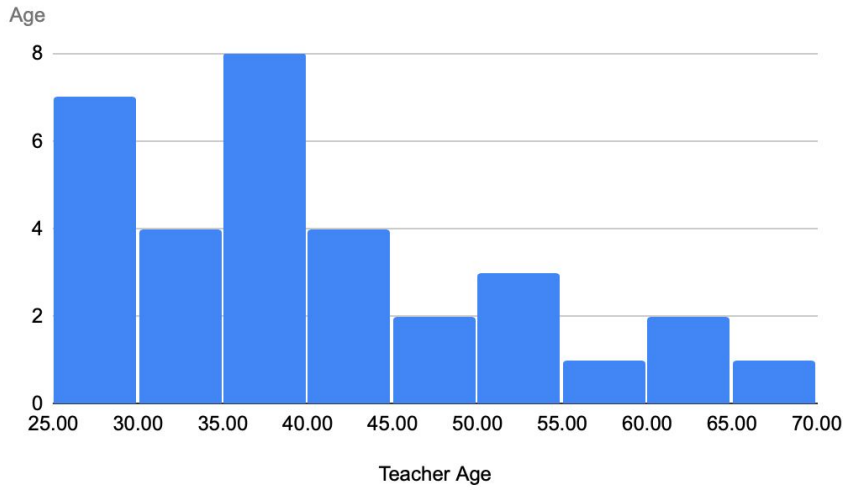
- Years of experience teaching (some may be novice; others veteran)
- Years of education (generally ranging from BA/BS to MA/MEd/MS/EdS
- Baseline experience integrating CASI principles in their teaching practice (see de-identified master codes)
- Beliefs about the value or necessity of equitable teaching practices
- Age
- Their own race, ethnicity, and cultural experience
- Languages they speak

Data

The complete survey responses cannot be shared in this document for privacy concerns, but charts summarizing the results are included below. My conclusions about teacher learners

characteristics, especially the learner differences listed above, are partially drawn from these survey results.




Age
8
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40.00
45.00
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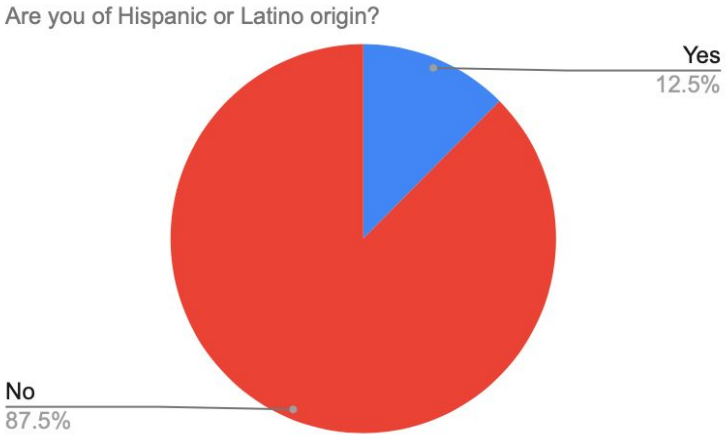
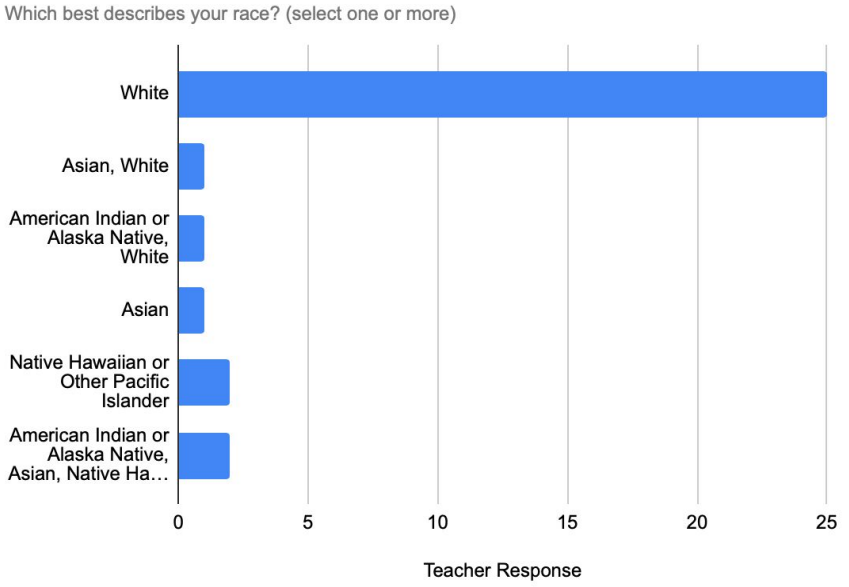
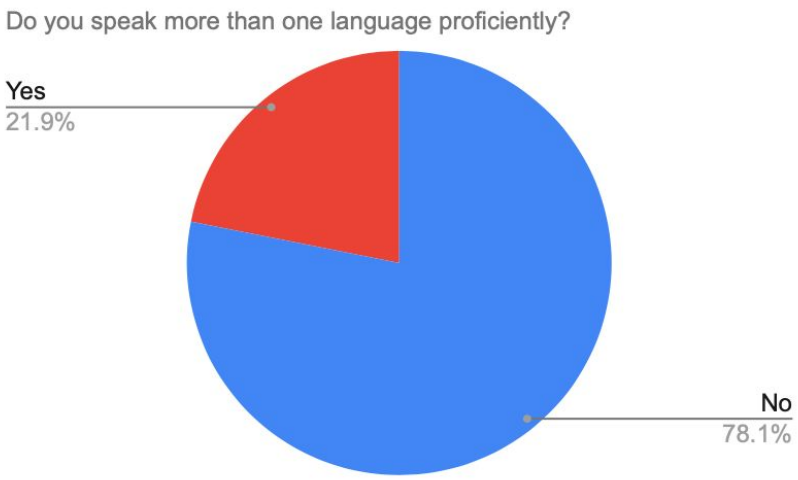
60.00
65.00
70.00
Teacher Age


Are you of Hispanic or Latino origin?
Yes
12.5%
No
87.5%


Which best describes your race? (select one or more)
White
Asian, White
American Indian or Alaska Native, White
Asian
Native Hawaiian or Other Pacific Islander
American Indian or Alaska Native, Asian, Native Ha…
0
5
10
15
20
25
Teacher Response



User Personas

Beyond demographics, local survey data suggested that teachers vary on a number of nuanced characteristics related to equity; these differences make it difficult to identify clearly demarcated personas. The prevalence of white female teachers might lead one to mistakenly assume that homogeneous beliefs about culture, privilege, and equity prevail, but in reality, there is considerable variation in beliefs, attitudes, and goals related to equitable teaching within that majority group and local teachers in general. A framework of educator mindsets and consequences (included in Bibliography) from USC helped me understand and depict this variation.

For our learner analysis, some relevant factors include:

- Current engagement with culturally responsive teaching practices
- Beliefs about demographics, culture, SES, social context, and group identity in education
- Beliefs about privilege and social justice vs. equal opportunity
- Deficit vs. asset thinking habits
- Beliefs about role flexibility (e.g., teacher as learner)
- Openness to/valuing of student perspectives and experience
- Purpose for adopting equitable teaching practices (e.g., political correctness/policy compliance, improving student outcomes, social justice)

I have developed the following user stories (adapted from survey data) to represent the nuanced beliefs, goals, and experiences of our teacher learners.

Jina Jacobs

- Ms. Jacobs is a white female teacher in her early 30s, teaching at a Title I school. She speaks English only and doesn't live within her school boundaries. She has a BA and has been teaching for 6 years; she currently teaches 4th grade for her second year at this school. The classroom is diverse, with Latinx, Pacific Islander, and White students. Several of her students are African refugees.
- Ms. Jacobs is somewhat unsatisfied with the ELA curriculum at her school. She believes social issues are important, but hesitates to bring them up in her lessons. She seldom

uses multilingual expressions or colloquialisms to connect with her students, citing her lack of language ability (beyond English) as a barrier. Ms. Jacobs believes (somewhat, not strongly) that it is important to use culturally appropriate material and connect content to students' lives outside of school; she often makes efforts to understand and draw upon her students' beliefs and home/neighborhood experiences.
- She would like to learn more about cultural teaching practices to improve her connection to a few struggling Latino and refugee children in her class.

Andreas Garcia
- Mr. Garcia is a Latino male teacher in his late 30s who teaches at a Title I school. He moved to the US from Mexico as a child and speaks Spanish and English fluently. Mr. Garcia holds an MEd degree, lives in his school boundaries, and has been teaching 5th grade for 7 years at his current school. His classroom is majority Latinx and minority White.
- Mr. Garcia is satisfied with the ELA curriculum. He believes social issues are important but also wants school to be a safe space where students (especially Latino students) don't have to confront the biases of the world that he faced at school as a child. Because of his spanish ability, he often uses colloquialisms and expressions (e.g., *mi hija*) to express cultural affiliation with his students. Mr. Garcia is passionate about involving the life experiences of all students and believes that classes should be focused more on community than competition.
- Mr. Garcia believes he already does a good job at connecting content and academic language with his diverse students. He is interested in learning the research and methods behind culturally responsive teaching to help others in his school see its importance, but worries that administrators may not have resources to devote toward professional development on the subject.

Lauren Williams
- Mrs. Williams is a White female teacher in her mid-40s who teaches at a Title I school. She comes from a fairly poor family, speaks English only, and holds a BA in teaching. She has been teaching for 6 years, all of which has been in 2nd grade. Mrs. Williams lives just outside her school boundaries; her classroom is a mix of Latinx, white, and black students.
- Mrs. Williams somewhat believes that social issues are relevant to elementary classrooms, but she is skeptical that the education system or curriculum actually privileges dominant groups over others. Though she is white, Mrs. Williams comes from a poor background; she disagrees that being white is necessarily associated with more opportunity in the United States. She speaks only English, but says she often uses colloquialisms to indicate cultural affiliation with students. Mrs. Williams somewhat agrees that the out-of-school experiences and differences of diverse students should affect how she structures her lessons in the classroom.
- Mrs. Williams strongly believes that education is the best way for students of all cultures to rise out of poverty. She is somewhat interested in learning more about equitable teaching practices, but worries that she won't be able to adopt many changes because of standardized 2nd grade curriculum. She thinks it is more important to focus on instructional quality than worry about ethnicity and gender.

Claudia Benally

- Ms. Benally is a veteran half-Native American teacher in her late 50s at a Title I school. She has taught for over 35 years, predominately in upper-elementary grades (4-6). She has been teaching 6th grade at her current school for 10 years. Ms. Benally speaks English fluently and some Spanish, along with limited Navajo. Her classroom is predominantly Native American and Hispanic/Latino. She also has a few refugee children in her class.
- Ms. Benally is generally satisfied with the current ELA curriculum. She strongly believes that social issues are relevant to the classroom and that teachers should go out of their way to use culturally appropriate materials. She is skeptical that privilege is a major factor in curriculum, or at least that anything can really be done about it, but somewhat agrees that being white means more opportunity in the US. She often integrates home/neighborhood experiences of her diverse students into lessons.
- Ms. Benally is close to retirement, but is interested in seeing whether equitable teaching practices could have an impact on student achievement, particularly with her 6th graders that are beginning to disengage from the classroom.

These user personas reflect the difficulty of dividing these teachers neatly among boxes like Social Justice Educator, Color Blind Educator, or Equity Skeptic. Their backgrounds and experiences before teaching, as well as their experience and training in the field, inform nuanced beliefs about how education, culture, and equity intersect. I believe that our teacher learners will draw on these nuanced beliefs to offer insights that help us evaluate and improve our chapters.

Implications and Summary

The learner analysis revealed that K-6 teachers have different opinions on the value of equitable teaching practices, but most agree that culture is important and that positive sociocultural interactions in the classroom can make a difference. One corollary of this finding is that teachers will approach our resource with different motivations and goals. To respond to this, we designed it to appeal to a wide spectrum of knowledge and offer users some ways to tailor their path through the resource according to their goals.

Learner analysis also revealed that some CASI domains come more naturally to teachers than others. The following are averaged domain scores from the pool of 32 teachers:

Life Applications: **1.30**	Self in Group: 3.47	Agency: 2.78

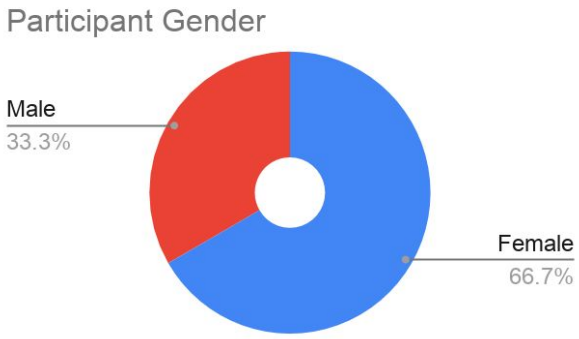
Teacher performance on Life Applications was lower than the other two domains (Self In Group, Agency), with an average dimension score of 1.30. While none of the domain scores are particularly high, it appears that teachers stand to gain the most from instruction on Life Applications. We thus focused on this domain for this project.

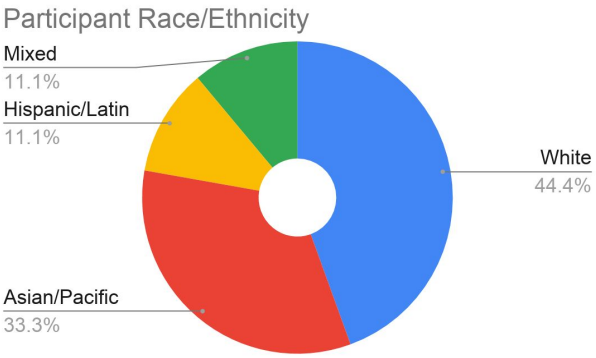
Based on the learner analysis, I felt it was appropriate to seek out a small, purposive sample (≈6) of local, Title I teachers to help us evaluate our product.

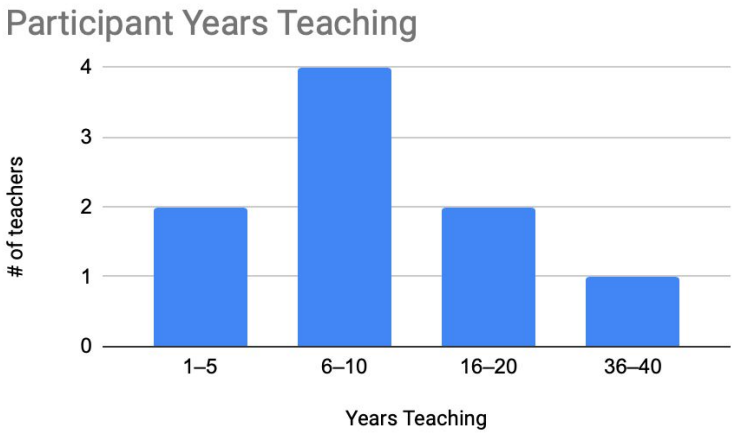
Actual Teacher Sample

Our goal was to find a small pool of teacher users (≒6) that could help us evaluate the effectiveness and direction of the book through surveys and semi-structured interviews.

In the end, we selected **nine (9)** teachers through purposive sampling of Dr. Jensen's existing connections in local elementary schools. These nine teachers represented three grade level groups from Salt Lake and Utah counties, grades 5 and 6. They varied considerably in demographic and experience, which was our goal. Details are in the charts below.







We asked the next question in a follow-up survey immediately after completion of interviews. The question specified what “working with us” might look like (e.g., reviewing chapters, editing example scenarios, adding classroom videos, co-developing PD materials)

Implications and Summary

The teacher sample for our pilot was actually more diverse than we expected, both racially, linguistically, and in years of experience.

Six of the nine pilot participants had previously worked with Dr. Jensen on research before the CASI was developed; because of that, we have video recordings of six of them teaching in their classrooms included in the same dataset that informed the earlier sections of this learner analysis. This suggests that the hypothetical learner personas and other data (including average and individual CASI scores) apply specifically to a majority of the actual pilot participants as well.

We were really pleased to find that a significant majority of participants are “very interested” in working with us on the project in the future. Our vision long term is for an even closer collaboration with teachers, where they help us develop the materials that will go in future chapters. This seems like a good group to begin that work with.

Appendix D: Environmental Analysis

The primary client for this project is Dr. Bryant Jensen of BYU's Department of Teacher Education, who created the CASI. A secondary client for the project is Dr. Royce Kimmons, who created the EdTechBooks platform that will host the book. Stakeholders include local school administrators and teachers, specifically in Title I schools, for (and with) whom the product is being designed.

The following environmental analysis is based on insights gained from in-depth discussions with Dr. Jensen and Dr. Kimmons over the course of the Fall 2019 semester, as well as observational data from local Title I classrooms and a training meeting of local school administrators.

Dr. Jensen

As a first-generation college graduate, former Spanish-speaking missionary, and former school psychologist in Phoenix, Dr. Bryant Jensen is well-acquainted with the difficulties that minoritized students (particularly Latinos) face in navigating and succeeding in US schools. Dr. Jensen's work at BYU focuses on improving classroom teaching and learning for underserved children, especially Latinos of Mexican and Central American immigrant heritage. Because positive, equitable teacher-child interactions are crucial for these students, Dr. Jensen researches ways to help teachers learn about and improve these sociocultural interactions.

In collaboration with colleagues, Dr. Jensen developed the Classroom Assessment of Sociocultural Interactions (CASI) to aid teachers in this process. The CASI is a classroom observation tool that helps teachers measure (and therefore improve) cultural aspects of teacher-child interactions in K-6 classrooms. Now that the CASI has been developed and validated, he wants to get it into the hands of practicing teachers in an accessible and collaborative way. Bridging the gap between believing in equitable teaching and doing equitable teaching is one reason why he wants this project done: by creating an OER that can teach and facilitate CASI learning and practice, we remove barriers of cost (prevalent with existing resources on the subject) and access to research-based practices, enabling teacher learning to rise to the **concrete**.

Dr. Jensen's timeline for this project was flexible, but he was strongly driven to create a resource that would work for teachers in the field. Both declarative knowledge of CASI and practical knowledge of the CASI are important to him. Because of COVID-19, we were not able to observe teacher practice in classrooms and thus couldn't assess practical knowledge. But the surveys and interviews were designed to assess as close to practical knowledge as possible without going into the classroom (e.g., asking teachers to score scenarios and adjust lesson plans).

For this portion of the project, Dr. Jensen expected our team to create several workable chapters that could be put in front of practicing teachers and evaluated according to how well they met the ethic of practicality (Doyle & Ponder, 1977): that is, are the chapters **relevant**, **recognizable**, and **feasible**?

Dr. Kimmons

Similar to Dr. Jensen, Dr. Royce Kimmons is a first-generation college grad, a former mentor for at-risk kids, and a former high school teacher for rural, underserved kids in Oregon. He is acquainted with the difficulties of equity and access in education, and this informs his involvement in this project via EdTechBooks. Dr. Kimmons' emphasis with ETB is to better meet the needs of students and teachers and to make education opportunities more equitable and accessible. His research grapples with how to make our institutions, practices, and educator behaviors more open and accessible. As such, his expectation for this project was that it would contribute to his goals by removing barriers and opening up opportunities for teachers to learn equitable teaching practices.

Teachers

In the long-term scope of this project, we consider teachers to be stakeholders as both co-designers and consumers of this resource. The evaluation portion of the project was the first stage of the collaboration, which I hope will continue as the book grows and evolves beyond this stage.

While many teachers are naturally curious and want to learn and grow professionally, the constraints of their life in the classroom necessitate a focus on practical application of what they learn. That was, therefore, a major criteria for our success, and one which I evaluated with them formatively: to what extent did they believe this resource was recognizable, relevant, and feasible? What about it needed to change to make that process easier?

Administrators

My observation of administrators in a local district training meeting emphasized that they, too, are under constraints of practice, but also have wider concerns about equitable performance of minority students, the constraints of standardized testing, and the trajectory of their schools as a whole. Teachers obviously share these concerns, but administrators were vocal in their responses to our initial training on the CASI, equitable teaching, and cultural accommodations. One administrator notably asked:

> I think we all agree that cultural accommodations are important, but what if doing so eventually undermines their ability to perform on standardized tests? In those tests, culture isn't accounted for.

While our resource is not specifically about cultural accommodations, the concerns of this administrator still applied. The content of our chapters addressed how applying CASI can improve student academic outcomes. While this may not be our primary motivation, it must be an obvious consideration for administrators to consider this book worthy of their investment of professional development time.

Digital Environment: EdTechBooks.org

The resource we create is hosted on EdTechBooks.org (ETB), the OER platform created by Dr. Kimmons. EdTechBooks already has a positive and growing reputation in the

industry for design quality and continuous improvement tools, making it an ideal platform for our use.

ETB's impact so far can be seen on the ETB Impact page. Some highlights include:

- **60+** books for student and teacher audiences
- **4.1 / 5.0** average chapter rating (high expectations for quality)
- **$259,000** in cost savings for reported book adoptions; estimated **$1.8 million** in savings via website activity

The ETB platform's many affordances enabled our learners to be successful:

- Free for us to distribute the book at scale to anyone with an internet connection
- Included features that make the book more interactive and personalizable than a traditional print resource
- Worked on mobile and desktop, making it more flexible for teachers to access
- Allowed us to link to more resources and provide easily downloadable guides that teachers can use to practice the CASI
- Included baked-in tools for continuous improvement and user behavior tracking make EdTechBooks preferable over other OER platform
- Unlimited access that does not expire
- No login required

There are few constraints of EdTechBooks that we needed to account for:

- **Print copies:** Some teachers prefer print. For them, EdTechBooks has a feature to download and print out a PDF that includes all the chapter content.
- **Learning checks:** the PDF version does not currently show the answers to learning checks, and the short answer questions have a character cap.
- **Language:** the book will be in English. We have long-term goals to translate the book (first into Spanish), but for this project we were limited to English content.
- **Continuous improvement:** later users will have the advantage of a better product.

Learner Path through EdTechBooks

Learners easily accessed the book by going to EdTechBooks.org and finding it on the home page or via the chapter link we sent to them. Once in the book, they have options: navigate as they would another webpage (either on desktop or mobile), interact with learning checks, jump from section to section, skip to the examples, check out the resources linked at the end, etc.

Summary and Implications

In summary, the environmental analysis showed that this resource needed to be as practical and accessible as possible, as well as focused on issues that administrators and teachers care about. Our content needed to meet these criteria for success, and EdTechBooks served our clients' needs well. Given that we approached evaluation formatively, our users' insights helped us rule out additional constraints.

Appendix E: Consulting Products/Precedent

While there is a significant amount of helpful research and products related to culturally responsive teaching on the market, few seek to accomplish the exact same goals or use a structure similar to our intended resource. Sleeter (2012)'s recommendation is useful to frame a discussion of the products that do exist:

> ...there is a need to educate parents, teachers, and education leaders about what culturally responsive pedagogy *means and looks like in the classroom*. Although presently there are many helpful descriptions in the professional literature, widely accessible portraits that include video would be very useful. Researchers might work to create such portraits with organizations that already have a sizable audience. (p. 578; emphasis added)

More resources have emerged since her article was published in 2012, but Sleeter identifies needs that are still relevant today. Some resources that target similar learner needs as our resource (often, books) do a good job at grounding in theory and research, but fail to demonstrate practicality for teacher learners. Others may offer excellent, applicable classroom examples of culturally connected and meaningful teaching, but are less accessible (hidden behind a paywall, only available in print form) to teachers. Our goal was and continues to be creating a resource that is grounded in research but rich in practicality, high quality but also free and accessible. Selected examples of product and precedent follow.

Books

Gay, G. (2010). *Culturally responsive teaching* (2nd ed.). New York, NY: Teachers College Press.

- This book is foundational and rich with arguments in favor of CRT. It would be a useful tool for teachers and administrators seeking to understand the why of CRT and some of the what, as well. Unfortunately, while the book is a great academic resource, it often fails to rise to the concrete and thus would be less useful for practicing teachers with limited time. Older editions cost between $15-35.

Clayton, J. B. (2003). *One classroom, many worlds: Teaching and learning in the cross-cultural classroom*. Portsmouth, NH: Heinemann.

- This book was on a shelf in the BYU Library with many similar resources. It does a good job of suggesting applications to the classroom and provides opportunities to inquire and reflect, many of which have been helpful as I consider how to pitch lesson ideas in our chapters. The primary issue with these (and other similar books) is a lack of concrete measurement tools for teachers to evaluate and improve, as well as more difficult access.

Kearney, K., Lindsey, D. B., Estrada, D., Terrell., R. D., & Lindsey., R. B. (2015). *A culturally proficient response to the Common Core: Ensuring equity through professional learning*. Thousand Oaks: Corwin.

- Available for $32, this resource offers several really positive features that will be helpful as we design our product. While many books discuss issues of equity, this one connects equity to the Common Core standards, immediately making it more useful to educators. While the focus seems somewhat bent toward administrators, this book frames teachers

as active learners, capable of reconciling equity and the common core by changing dispositions and learning practical strategies. I hope to follow their lead by connecting examples in our resource to specific Common Core standards.

Websites

Tolerance.org

- Teaching Tolerance is a project of the Southern Poverty Law Center focused on helping teachers integrate social justice topics into their classroom. The website has classroom resources (like lesson plans and teaching strategies) and professional development (request a training or do self-guided learning). They also release a newsletter and magazine, which subscribers can get for free. Overall, Teaching Tolerance is one of the most useful resources I found for anti-bias education. It may be a good place to pull lesson and chapter ideas from in the future.

Primers/Toolkit Resources

Strategies and Lessons for Culturally Responsive Teaching: A Primer for K-12 Teachers (1st edition) - Roselle Kline Chartock

- This is the kind of resource that I can imagine some teachers purchasing. I couldn't actually read this primer because it was too expensive ($25-75), but it provides teachers a collection of forty teaching strategies and activities to practice culturally responsive teaching.

NAPE's Eliminating Barriers through Culturally Responsive Teaching Toolkit

- This resource by the National Alliance for Partnerships in Equity (NAPE) is one of the more recent on the market (May 2018). It was also too expensive for me to access fully, but according to descriptions, this resource intends to help teachers develop culturally responsive mindsets and curriculum. It offers a "reflection tool" to help educators self-evaluate and "reflect on current practices." For additional fees, teachers can access worksheet bundles and relevant posters. While there are certainly issues of teacher access with this resource, it has two features that I want to integrate into our OER design: 1) cyclical application steps to help teachers make use of the resource, and 2) guides for professional learning communities (PLCs) to implement the tool with their colleagues.

Teacher-to-Teacher Lesson Plans

- This example from TeachersPayTeachers.com shows that teachers have also created and shared smaller-scale lesson plans, tools, and resources that can be purchased for a lower price. Given that most of the resources I've mentioned cost between $20-70, a $4 lesson plan could be an attractive option for educators with budget or time constraints.

Observation Systems

The Classroom Assessment Scoring System (CLASS) developed by UVA's Curry School Center for Advanced Study of Teaching and Learning

- While this observation system is not related to equity or cultural responsiveness, it is one of the few resources that uses video observations of classroom practice to improve teaching quality. The CLASS has been widely used to "effectively measure teacher-student interactions in a classroom setting and offer resources for strengthening those interactions" (UVa website).

- The CLASS system offers several advantages we want to mimic with the CASI resource, including: recording teacher observations and systematically rating them; focusing on teacher-student relationships; creating a common, concrete language around effective practice; and teachers and administrators to document improvement.
- We aim to diverge from the CLASS system in several ways, by: focusing on sociocultural dimensions of teacher-student relationships, rather than generic teaching quality; enabling regular teachers to learn to rate observations, rather than submitting videos to experts or paying for a web-based course; improving accessibility.

Comic Imagery

- Our resource will use illustrations (in the form of comics) to depict teaching scenarios that apply the CASI to varying degrees. To better understand how to use the comic format effectively, the art team (Dr. Kimmons and Student 3) will study best practices depicted in existing comics, including storyboards, visual styles, dialogue, and digital asset libraries. Our goal is to adopt those practices in the CASI scenarios.

Summary

My review of existing products and precedent suggested that we could be successful by adopting some commonly-used instructional strategies and improving on others:

- **Existing resources work well when they enable users to glean both foundational/theoretical knowledge *and* practical knowledge,** usually by including research-based insights and lesson/application ideas. We can improve on this by relating examples to Common Core standards and including an application guide that walks teachers through the process of adapting existing lessons, rather than only offering additive lesson suggestions.
- **Existing resources work well when they are accessible to teachers,** both in terms of cost and content. While teacher-made or practice-focused resources may succeed with one or another of these factors, it is difficult to find a high-quality, research based resource that is also free and easily accessible. Our use of EdTechBooks is a needed innovation in this respect.
- **Existing resources work well when they result in reliable and useful teacher data.** The CLASS is a good example in this area. As we design our resource, we will need to consider how well non-expert raters (teachers) will be able to produce reliable scoring, and how long it will take (in PDAR cycles) for them to get comfortable enough to gain value from the resource.

Appendix F: Content or Task Analysis

In the context of instructional design, the purpose of a task analysis is to organize and define the knowledge, strategies, and processes of the *thing* you want others to learn, essentially characterizing expert performance for that job.

The existing CASI is essentially already a content/task analysis model for how teachers at different levels of expertise perform the knowledge and skills we are teaching in this proposed resource. Our "experts" are the teachers that demonstrate a high degree of well-connected teaching practices, which would score a 5 on a given CASI dimension (this is very uncommon). Expert teachers in this regard are not static, perfect performers; rather, they use a development cycle to plan, teach, and continuously improve based on observation using the CASI, applying the dimensions and indicators at the right time and in the right context.

Our learning content is grouped in two areas. You can click the links below to see a breakdown of the knowledge/skills that we're teaching in detail (an important part of content analysis), as depicted in the CASI Rubrics:

1. Language Use
2. Content Connections

One limitation of the above rubrics is that there are **many** possible ways a teacher could foster a well-connected lesson for either of these CASI domains, and the rubric doesn't depict the context that surrounds equitable teaching practices in action. It provides specific indicators and scores, but it doesn't prescribe how those indicators are achieved in real classrooms.

To better understand how the CASI (a flexible measurement tool) might be applied by quality teachers in real classrooms, and to be able to characterize expert performance (a CASI 5), I spent many hours observing teacher videos and documenting how indicators emerged in lessons spanning math, ELA, history, and reading. Student 1 and Student 2 joined me in this process as we scored and annotated and discussed what we observed. After many of these sessions, we began to get a handle on how equity shows up (or doesn't) in the classroom, including how "expert" teachers reinvented and remixed CASI indicators day-to-day to solve problems in their classrooms.

It is important to note that during this process we found very few true "5"s. But by making observations across a breadth of teachers, we were able to distil some key habits, questions, and practices that lead to success. These insights were combined with the existing PDAR (Plan, Do, Analyze, Revise) framework to create a model of expert performance that influenced how we wrote every section of the book. For example, because so few teachers ever scored a 5, we realized that simply writing "ideal" examples sans context would not be enough.

To illustrate how an expert teacher might exhibit these CASI habits, questions, and practices, I created a conceptual flowchart that walks through planning and leading a well-connected lesson featuring Content Connections (see below). This flowchart combines our observations and PDAR with the formative use guidelines to show a "skeleton" of how a teacher integrates the CASI to get her job done. You can find more explanation below the flowchart.

An expert teacher plans, teaches, analyzes, and revises a lesson using Content Connections.

Step 1	Which dimension?	*Content Connections*
Step 2	What lesson can I adapt?	*Practicing transition words/phrases (using recipes) (CCSS.ELA-LITERACY.W.6.2.D)*
Step 3	How can I practice the indicators of content connections?	*Share my grandmother's recipe.* *Ask students to bring family recipes.* *Discuss how cooking is done differently in different cultures. Recipe vs. oral tradition?* *Ask students if they help cook at home. What is it like?* *Potential problems: parents don't use recipes. Kids don't know how to talk about cooking. Families eat mostly fast food. How can I respond to these problems?*
Step 4	How can I be observed?	*Video or peer observation? Peer obs.* *Who is observing? 1 teacher from PLC.* *How many observations? 3 this week.* *How long? 15 minutes per obs.*
Step 5	Let's work from the plan.	*Be flexible, but also experiment. Some things may work; others may fall flat.*
Step 6	How did it go?	*Meet with observer during recess to discuss how things went.* *Did well on sharing, less well on drawing connections.* *Met about half of my goals. Students responded well, especially Latinos.*
Step 8	Do I need to revise my plan?	*Observation went fairly well, but I want to include video next time. Vague field notes.* *Work on this dimension once more, then switch to Language Use.* *Need to talk to a few of the working parents to learn about students' responsibilities and expertise at home.*
Step 9	Let's try it again.	

As this illustrates, expert teachers use reflective questions, careful planning, and diligent observation to reach a high level of socioculturally connected lesson content.

This model demonstrates a task analysis for one half of our learning content, Content Connections. While the specific responses are not related to Language Use, I believe the general steps represent how experts would practice the relevant skills for that learning content group as well. The expert flow of ideas, questions, practice, and reflection will be the same.

This task analysis yielded several implications for the project and my proposed design:

- Given that teachers will never perform perfectly on all 9 (or even 2, in this case) dimensions in any single, 15-minute lesson, we need to focus on the more relevant standard of excellence: understanding the concrete use of **the cycle** to iteratively practice each dimension. The chapters should emphasize learning the CASI improvement process over seeking "perfect" demonstration of all the indicators.
- Analyzing expert performance revealed that many CASI skills are cross-cutting between dimensions. Indicators from various dimensions will show up in other practical ways, because they often necessitate each other. For example, encouraging students to share (CC) may necessitate using social conversation or non-school language (LU), whether the teacher is currently focusing on LU or not. We should emphasize the cross-cutting nature of these skills in chapters moving forward.
- The present task analysis didn't reveal whether "ideal" performance requires observation and analysis from peers (like a PLC), or if teachers using video recordings and self-observation techniques can achieve similarly high levels of performance. Several teachers in the pilot said they would feel more comfortable recording and analyzing themselves, rather than having other teachers watch them. But Dr. Jensen's research suggests that it is more valuable to practice with peer teachers. We'll have to figure out how to address that moving forward.

Appendix G: Annotated Bibliography

1. Domain Knowledge

Section Summary
Overall, the background context for my project pulled from the diverse literature on culturally meaningful/relevant/responsive/equitable teaching practices, teacher demographics, and teacher learning/professional development. A few tensions arise from comparing the literature:

- It is difficult to isolate a good name for the culturally-connected teaching practices of the CASI when faced with CRT, CRP, culturally relevant education (CRE), and more. After clarification with Dr. Jensen, we settled on using "equity" and "equitable teaching" for the book.
- While CRT, CRP, etc. have great promise, the literature suggested that adoption of these practices is difficult for a variety of reasons. The sources on innovation and practicality theory in the next section help to explain what can be done to counteract this tendency (namely, increase recognizability, relevance, and feasibility)
- The CASI occupies a unique space in the literature. While many call for these practices, few researchers offer concrete/accessible ways for teachers to observe, analyze, and improve their cultural teaching practices.
- The experience of one minoritized student (e.g., a Latino girl in Houston) may not generalize to another (e.g., a Hmong boy in Fresno). While the literature highlights similar difficulties all minoritized students may face, there are important differences and tensions between the stereotypes of minority groups. Our work must help teachers creatively adapt their practices and let students tell their own stories, rather than teaching teachers to reinforce generalizations that may not be helpful or accurate.

Gay, G. (2010). *Culturally responsive teaching* (2nd ed.). New York, NY: Teachers College Press.

- In this foundational book on culturally responsive teaching (CRT), Dr. Geneva Gay lays out her case for why teachers and administrators should adopt practices that respond to the circumstances of students of color to improve their academic performance. While the CASI differs in some ways from CRT, many scholars and practitioners use CRT to frame issues of culture and equity in public education. My understanding of the field and instruction on CASI's Content Connections necessitates familiarity with CRT.

US Department of Education, Office of Planning, Evaluation, and Policy Development, Policy and Program Studies Service. (2016). The state of racial diversity in the educator workforce. Washington, D.C.

- In 2016, the US Department of Education released this report describing the need to increase diversity of the educator workforce, which is currently over 80% white. One justification for creating this CASI resource is to respond to the widening disparity between teacher race/culture and student race/culture. Since many US teachers are of a different race/culture than their students, they need practical tools to know how to connect lessons to their students' lives.

García, O., & Wei, L. (2018). *Translanguaging: Language, bilingualism, and education*. Basingstoke: Palgrave Macmillan.

- This research provides one of the most current scholarly perspectives on how individuals use and adapt language across global and local sociolinguistic situations. Understanding Garcia's and Wei's theories on translanguaging helps to frame our CASI chapter on Language Use.

Flores, N., & Rosa, J. (2015). Undoing appropriateness: Raciolinguistic ideologies and language diversity in education. *Harvard Educational Review, 85*, 149-171.

- This article helps frame our approach to teaching teachers about language use via the CASI. The authors describe how the language and linguistic practices of students of color in the US, regardless of their cultural heritage, are often positioned as inferior and inappropriate for academic contexts—even when English learners adopt "idealized linguistic practices, they are still heard as deficient language users" (p. 167). The authors suggest that we should try to denaturalize the "standard" linguistic practices of white speakers and listeners in school.

Sleeter, C. E. (2012). Confronting the marginalization of culturally responsive pedagogy. *Urban Education*, *47*(3), 562–584.

- Sleeter discusses how culturally responsive pedagogy (CRP) and multicultural practices in education have had to compete with standardized curricula and pedagogy. She offers three recommendations: 1) generate more research connecting CRP to academic achievement, 2) produce accessible resources that educate teachers, administrators, and parents about CRP, especially using video examples from classrooms, and 3) reframe the public debate by emphasizing the complexity of teaching in diverse classrooms and the need for non-standardized, non-scripted, culturally responsive practices and curricula. These recommendations are relevant to this project, particularly #2.

Spycher, P., Girard, V., & Moua, B. (2020). Culturally sustaining disciplinary language and literacy instruction for Hmong-American children. *Theory into Practice, 59*(1), 89-98. DOI: 10.1080/00405841.2019.1665410

- This article argues for integrating culturally sustaining pedagogy for Hmong-American children, a minoritized group that will be the focus of one of our chapter scenarios. While I am somewhat acquainted with the perspectives of Latinx and Black students, my understanding of Asian students' (with whom Hmong-American children are grouped) experience is limited. This article helps to move past the "model minority" stereotype and advocate for instruction that strengthens and promotes cultural and linguistic pluralism in the classroom.

Jensen, B., Grajeda, S., & Haertel, E. (2018). Measuring cultural dimensions of classroom interactions. *Educational Assessment, 23*(4), 250-276.

Jensen, B., Mejía-Arauz, R., Grajeda, S., García Toranzo, S., Encinas, J., & Larsen, R. (2018). Measuring cultural aspects of teacher–child interactions to foster equitable developmental opportunities for young Latino children. *Early Childhood Research Quarterly*.

- Both of the articles above chronicle the development and validation of the CASI. They provide foundational knowledge on why the CASI was needed, how it was created, and to what extent it works for the intended population.

2. Learning Theories and Instructional Strategies

Section Summary
These sources depict teachers not as obstinate resistors of cultural teaching practice innovations (or innovative practices in general), but rather practitioners trying to navigate a deeply complex educational ecology that makes it difficult to adopt innovations practically. Framing innovation adoption as a multilevel learning problem related to perceived practicality gives us considerable direction as a product team. Taken together, the literature advocates for practical knowledge as a higher form of learning than theoretical knowledge, encouraging us to design our instruction with learning theories of practicality in mind.

- Combining these recommendations of Sleeter (2012) and Neri et al. (2019) and Janssen (2015), we begin to see the need for concrete, practical, accessible resources that teach how to teach meaningfully in multicultural settings. Our instructional strategy was crafted to meet those needs, and the union of the CASI and OER (via EdTechBooks) as a resource was uniquely well-suited when viewed on those terms.
- Openness is a crucial part of expanding innovations for practicing teachers, especially those in Title I schools with limited resources.

Jensen, B. (2017, Nov). The Classroom Assessment of Sociocultural Interactions-Upper Elementary Version (CASI-U).

- This is the most recent published version of the CASI-U. In this project, the CASI is both content and method of instruction that will guide the structure of the chapters. Dr. Jensen's research suggests that the CASI is an effective way to scaffold teachers' learning of culturally meaningful practices.

Neri, R. C., Lozano, M., & Gomez, L. M. (2019). (Re)framing resistance to culturally relevant education as a multilevel learning problem. *Review of Research in Education*, *43*(1), 197–226.

- The authors investigate why teachers "resist" adopting culturally relevant educational (CRE) practices, a topic of great relevance to this project (as we are essentially trying to help teachers adopt CRE's). They propose that this resistance is not an issue of compliance, but *learning*, stemming from 1) misunderstanding the nature of CREs and doubting their efficacy, and 2) lacking know-how to execute them. This theory of how teachers learn about and adopt change is crucial to our design process, suggesting we must diagnose why and for whom the changes we are proposing could be difficult to adopt.

Janssen, F., Westbroek, H., & Doyle, W. (2015). Practicality studies: How to move from what works in principle to what works in practice, *Journal of the Learning Sciences, 24*(1), 176-186.

- Janssen, et al. further develop Doyle and Ponder's (1977) Practicality Theory, which explores why teachers often reject or hyper-modify innovation proposals—put simply, because innovations often fail to exhibit practicality. They argue that design researchers often claim to have bridged the theory/practice divide, when in fact they have ignored many of the complexities (e.g., histories, relationships, cultures) that teachers face when trying to adopt innovation. The authors describe three dimensions of practicality that should be exhibited by successful change proposals directed at teachers: **recognizability, relevance, and feasibility/cost**. These three dimensions, and the practicality framework in

general, greatly informed our instructional strategy and were the basis for our interview protocols/how we judged the success of our chapters.

Filback, R., & Green., A. (2013). A framework of educator mindsets and consequences. Adapted from work by Bartolome, 2008; Hancock, 2011; Milner, 2010; Pollock, 2008. Retrieved from rossier.usc.edu

- This resource from USC's Rossier School of Education collects research on a series of educator mindsets and their relevant consequences. They highlight five dimensions on which teachers may diverge: demographics (blind vs. aware), culture (deficit vs. asset), SES (equality vs. equity), social context (a-contextual vs. sociocultural), and group identity (categorical vs. intersectional). Teachers will learn and interpret our content through these mindsets, so understanding them (as well as the ramifications) helped me craft a more effective instructional strategy. The mindsets also informed user personas.

Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2015). *Learning to improve: How America's schools can get better at getting better.* Cambridge, MA: Harvard Education Press.

- Bryk and colleagues provide a strategy/theory for how teachers can work together to improve their practice. They suggest four stages of continuous improvement: planning, doing, analyzing, and revising (PDAR). We adopted these stages in our chapters to scaffold teachers' application/integration of the content to their classrooms.

Kimmons, R. (2016). Expansive openness in teacher practice. *Teachers College Record*, *118*, 1-34.

- As an instructional strategy for teachers, open educational resources are tremendously promising: they can help solve many problems teachers face, including issues of equity, collaboration, resource quality, and cultural responsiveness. But openness in the context of teacher learning also comes with systemic and institutional barriers. We consider both the potentials and barriers while creating and evaluating this OER.

Abdulrahim, N. A., & Orosco, M. J. (2020). Culturally responsive mathematics teaching: A research synthesis. *The Urban Review, 52*(1), 1-25.

- This article represents many practice-focused sources we have consulted and will consult while developing the CASI resource. It provides examples of instructional strategies and lessons that practicing teachers have used to integrate culture in mathematics subjects.

Ellis, S. (2010). Using PMFSurvey.com (formerly survey.io). *Startup Marketing.* Retrieved from https://www.startup-marketing.com/using-survey-io/#

- Sean Ellis, an entrepreneur and startup advisor, developed a theory of product-market fit that is helpful for me when deciding what questions to ask our users about their experience with the book. His research showed that startups scoring high enough on a few key questions (in particular, "How would you feel if you could no longer use this resource?") had achieved product—market fit and were more likely to be successful with users. Our resource is analogous to a startup, so I integrated his questions and theory of PMF (found at pmfsurvey.com) into the interview protocol.

3. Instructional Design Approaches

Section Summary
Based on the literature, both the ID process and the instructional product have potential to be meaningful contributions of this project.

- Our instructional design approach needs to be grounded in teachers' terms of use. The literature overall suggests that our teacher-users may come to the table with misconceptions about OER *and* doubts about educational innovations and practicality. To respond to this, we will need to be careful how we pitch the product to teachers and clarify that we are approaching the design on their terms, for their benefit. We may carefully position them as co-designers, especially moving forward beyond the scope of this project.
- Designing with openness in mind will enable us to connect our chapters to broader resources and utilize continuous improvement techniques. This flexibility resulted in a more responsive, high quality resource.
- Our project is a good fit for a modified Agile management approach.

Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: a practical approach to enhancing organizational performance* (2nd ed.). San Francisco, CA: Jossey-Bass.
+
Jensen, B. Interpretive Arguments for Formative CASI Use (unpublished).

- Dr. Jensen developed these interpretive use arguments (IUAs) for the CASI as validity arguments for the continuous improvement process of teachers using it. Using the previous **Langley, et al. (2009)** source as a reference, his IUAs apply the *plan, do, analyze, revise* (PDAR) steps to scaffold teacher learning and application of the CASI. We adapted these arguments for our chapters and secondary resources.

Saunders, W. M, and Marcellatti, D. J. (2015). Teacher collaboration: Handbook of concepts and methods (ILT/PDAR). Los Angeles: Talking Teaching Foundation.

- This source provides methods and examples of how to enable continuous improvement by leveraging teacher collaboration, in the form of instructional leadership teams (ILTs). We drew from it while developing our own adapted handouts.

Kimmons, R. (2014). Developing open education literacies with practicing K-12 teachers. *The International Review of Research in Open and Distance Learning, 15*(6), 71-92.

- In this study, Dr. Kimmons found that teachers participating in formal learning experiences about open education were able to improve their literacies and overcome misconceptions, false confidence, and faulty expectations about open ed. I consulted his instructional strategies when planning our efforts to help teachers understand the open nature of our resource and what it enables them to do.

Stellman, A., & Greene, J. (2015). *Learning Agile* (Kindle Edition). Sebastopol: O'Reilly Media, Inc.

- As a student-led instructional design team, we developed a process for creating this resource that will be recreated/adapted by future writers and designers. I pulled a number of practical methods from Stellman and Greene's (2015) guide on Agile processes in project management, specifically Kanban, and used them to improve our project flow.

Increasing the quality of project management cut our development time by 50% and resulted in more accountability and a better final product.

Seidman, I. (2006). ***Interviewing as qualitative research: A guide for researchers in education and the social sciences*** **(3rd ed.). New York: Teachers College Press.**

- The evaluation stage of the project will involve in-depth, qualitative interviews with teachers, discussing our product in light of the dimensions of practicality theory (recognizability, relevance, feasibility/cost). In doing so, I applied methods from Seidman's (2006) guide to qualitative interviewing by bringing prepared semi-structured prompts related to these dimensions, asking follow-up questions, and obtaining practical examples.

Appendix H: Design Specifications

Our product is an open educational resource (OER) hosted on the EdTechBooks.org platform. I created a portion of the full book: two polished content chapters. These chapters provide the design framework for the rest of the book (the other 7 content chapters). The eventual structure (beyond my portion of the project) will include an introduction chapter, 9 content chapters organized into 3 domains, and a conclusion chapter.

For my portion of the overall project, we produced two chapters within the Life Applications domain:

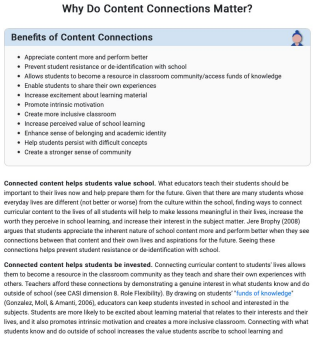
- Chapter 1: Language Use
- Chapter 2: Content Connections

Structure Overview

Part I: Introduction ➡ **Part II:** Scenarios ➡ **Part III:** Application

Part I: Introduction

- *What is this dimension?*
- *Why does this dimension matter for teachers/students?*
    - Reflective questions; relevant research; student outcomes; dispositional awareness
    - Learning checks related to the dimension's importance
- Indicators: *How do we measure the dimensions?*
    - Explanation of each indicator, with scoring rubrics, written examples, and learning checks


Why Do Content Connections Matter?

Benefits of Content Connections

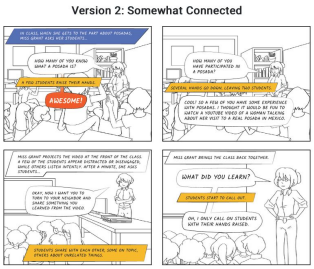
- Appreciate content more and perform better
- Prevent student resistance or de-identification with school
- Allows students to become a resource in classroom community/access funds of knowledge
- Enable students to share their own experiences
- Increase excitement about learning material
- Promote intrinsic motivation
- Create more inclusive classroom
- Increase perceived value of school learning
- Enhance sense of belonging and academic identity
- Help students persist with difficult concepts
- Create a stronger sense of community

Connected content helps students value school. What educators teach their students should be important to their lives now and help prepare them for the future. Given that there are many students whose everyday lives are different (not better or worse) from the culture within the school, finding ways to connect curricular content to the lives of all students will help to make lessons meaningful in their lives, increase the worth they perceive in school learning, and increase their interest in the subject matter. Jere Brophy (2008) argues that students appreciate the inherent nature of school content more and perform better when they see connections between that content and their own lives and aspirations for the future. Seeing these connections helps prevent student resistance or de-identification with school.

Connected content helps students be invested. Connecting curricular content to students' lives allows them to become a resource in the classroom community as they teach and share their own experiences with others. Teachers afford these connections by demonstrating a genuine interest in what students know and do outside of school (see CASI dimension 8. Role Flexibility). By drawing on students' "funds of knowledge" (González, Moll, & Amanti, 2006), educators can keep students invested in school and interested in the subjects. Students are more likely to be excited about learning material that relates to their interests and their lives, and it also promotes intrinsic motivation and creates a more inclusive classroom. Connecting with what students know and do outside of school increases the value students ascribe to school learning and

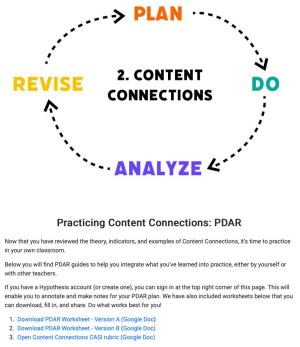
Part II: Scenarios

- This is the "center" of the chapter: three teaching scenarios, shown in comic format, that depict disconnected, medium-connected, and well-connected versions of the same hypothetical lesson. Each scenario is aligned to a Common Core standard.
- Each scenario has a written transcription and our team's CASI rating for all indicators.



Part III: Application In the Classroom (PDAR)

- This section describes the *Plan, Do, Analyze, Revise* cycle (PDAR) in context of the dimension.
- Teachers are encouraged to plan a lesson that integrates the dimension, video record or peer-analyze them teaching that lesson, then analyze what worked and what didn't and revise their plan accordingly.
- Also: a conclusion and a list of resources for teachers to explore further.



Each chapter was developed collaboratively on Google Docs, while illustrations were made with Adobe Photoshop and Illustrator. Once completed on Google Docs, the chapters were uploaded to EdTechBooks.org where further design and editing took place.

Structure Details

Part I: Introduction

- Introduction to the dimension
- Quotes from experts related to the dimension
- Why it matters; exploration of the research behind the dimension, including common misconceptions, and expected positive outcomes
- Learning checks related to the introduction

Part II: Scenarios

- Explanations of each dimension's indicators (sub-categories used for scoring teaching examples)
    - Examples for each level of the indicator (5 examples per indicator) that readers can attempt to score, related to specific state standards from across the U.S.
    - These examples highlight differences between generic effective teaching and effective cultural aspects of teaching.
- A central, hypothetical scenario (more extensive than the indicator examples) which the reader will evaluate to better understand the dimension's nuance
    - Comic strip illustrations depict interactions between a K-6 teacher and students, illustrating different levels of proficiency with the dimension
    - Three versions of the scenario with illustrations and text explanation (typically, versions will represent a 1, 3, and 5 score in the rubric for that dimension)
    - In-depth explanations of why each version was scored the way it was
- Learning checks related to the main scenario, including chances to rate the teachers demonstration of the CASI indicators

Part III: In the Classroom

- Application section that applies the PDAR (Plan, Do, Analyze, Revise) cycle to lesson planning using the CASI dimension
    - Brief refresher on the PDAR steps
    - PDAR guides that readers can download and fill out to plan their lesson

    - Reflection questions that guide readers/teachers through planning, doing, analyzing, and revising stages
    - Instructions for collaborating with PLCs and different ways to observe/record
- Conclusion
- Resources list with links to videos, websites, podcasts, lesson ideas, etc.

Learner Walkthrough (click here to access the video walkthrough on YouTube)

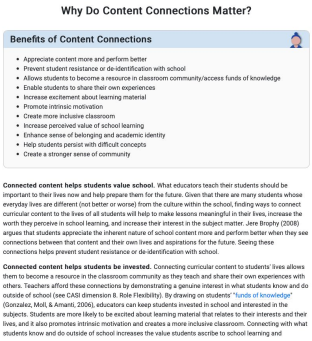
- Learners will access the CASI text either by linking or navigating directly to EdTechBooks.org, per instructions from their professor. It is possible that learners will have a unique link that takes them directly to a specific version of a chapter.
- If not linked directly, learners will find the book either on the home dashboard of EdTechBooks or by clicking “Explore More” at the top of the page. It will also be indexed on search engines. Once they have found it, they click on the cover to open the table of contents and navigate to the appropriate chapter (there will be two chapter options available to them)
- Once in the chapter, teachers will have the ability to download and print a paper copy that includes all the content of the chapter, if they desire.
- Learners will begin reading/scanning. At the top of the page, there will be a jump menu that they can use to move directly to sections of the chapter.
- The chapter will engage them conversationally, encouraging learners to consider the perspective of minoritized students and how the dimension addressed in the chapter could be important for their teaching context.
- From here, the chapter flows like an hourglass: it will begin with the dimension in its broadest definition, then focus inward on specific rubric indicators, and then depict a realistic teaching scenario (visual and text) that readers will be asked to evaluate. At this point, learners will need to apply what they have learned so far about the dimensions in order to accurately evaluate the teachers practice. They will have opportunities for reflection.
- Throughout the chapter, learners will encounter an assortment of learning checks and usability questions (multiple choice, reflection questions, scenario rating questions, UX questions, dispositional questions). Learners can interact with these elements at will (and will be encouraged to), but are not required to do so.
- Learners will track their progress through the chapter with the blue status bar at the top of the page.
- At the bottom of the chapter, learners will encounter an end-of-chapter survey that submits automatically when they navigate away from the page.
- Because EdTechBooks does not collect identifiable data from its users, learners will not be tracked between reading sessions. Each session will be treated as a discrete event.
- The final version of the chapters for this project will only be in English. In future development, when more funding is available, Spanish translations (and possibly others) will be made.

Alignment with Learning Goals

Part I: Introduction

Learning Goal 1: Accurately define the given dimension.
Learning Goal 2: Discuss the benefits and challenges of the dimension.

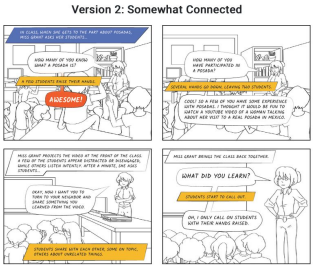
Part I defines the dimension in several ways. That definition is deepened in Part II. The “Why it matters” section explores the significance of the dimension and addresses common



Part II: Scenarios

Learning Goal 3: Use indicators to score a written teaching scenario.

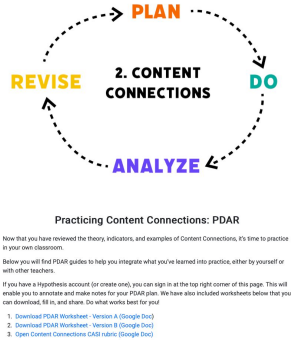
Part III’s PDAR cycle guides teachers through the process of adjusting/adapting lesson plans and includes questions to spark ideas.



Part III: Application In the Classroom (PDAR)

Learning Goal 4: Generate ideas for adjusting/adapting a lesson plan to better integrate the dimension.

Part III’s PDAR cycle guides teachers through the process of adjusting/adapting lesson plans and includes questions to spark ideas.



5. Meaningfully discuss the practicality of the resource (recognizability, relevance, feasibility).

➡

In the case of this pilot, the **overall experience** of the chapter facilitates teachers’ abilities to meaningfully discuss the practicality of the resource.

Design Structure and Bibliography, Precedent, Constraints

Our design responds to the following findings from the bibliography, precedent products, and constraints:

- There is a widening gap between teacher language and culture (~80% white) and student language and culture in the United States. By focusing on how teachers can leverage the

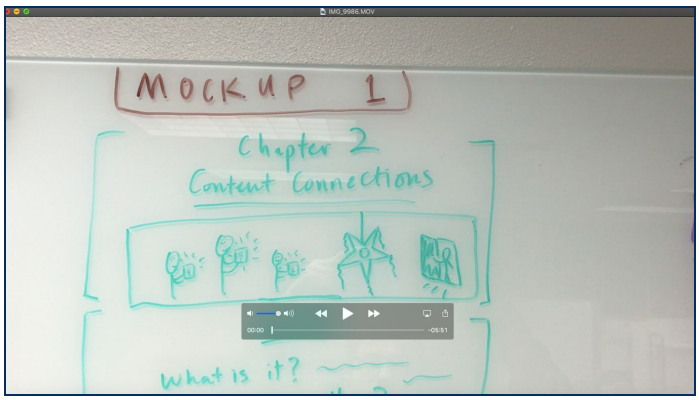
experience and expertise of students, this resource becomes particularly useful for teachers that do not share their students' cultural knowledge of the world and of school.

- The literature on CRT, CRP, and CRE often provide research-based conclusions and lesson ideas/suggestions, but rarely a framework for evaluating and improving sociocultural teaching in practice. Our proposed PDAR section will provide a needed ladder from abstract theory to concrete practice.
- Sometimes teachers are depicted as obstinate resistors of cultural teaching innovations in the literature, but it is more realistic to frame lack of adoption as a learning and practicality problem, putting the focus on faults in resource design/communication. By richly scaffolding observational tactics and showing how the CASI is *adaptive*, rather than additive, our proposed design should better pass the practicality test of teachers.
- Many existing resources are inaccessible due to cost or availability. By designing and hosting our resource for free on EdTechBooks, we will remove the majority of accessibility barriers. We will also enable continuous improvement of the resource, which is important as research on the CASI develops.
- Many existing resources do well by providing real-life examples of culturally responsive pedagogy. The proposed design builds on this by helping teachers concretely deconstruct why a given lesson may be culturally connected and meaningful, or not.
- Constraint: teachers may prefer print. EdTechBooks will enable printing the whole chapter.
- Constraint: practicing teachers are a fairly new audience for EdTechBooks. The proposed design will include UX/evaluative questions, and later interviews will help us understand and adjust for the experience of this new user group.
- Constraint: continuous improvement. The proposed design will give teachers perpetual access to the resource, so they will be able to take advantage of improvements as they arrive.

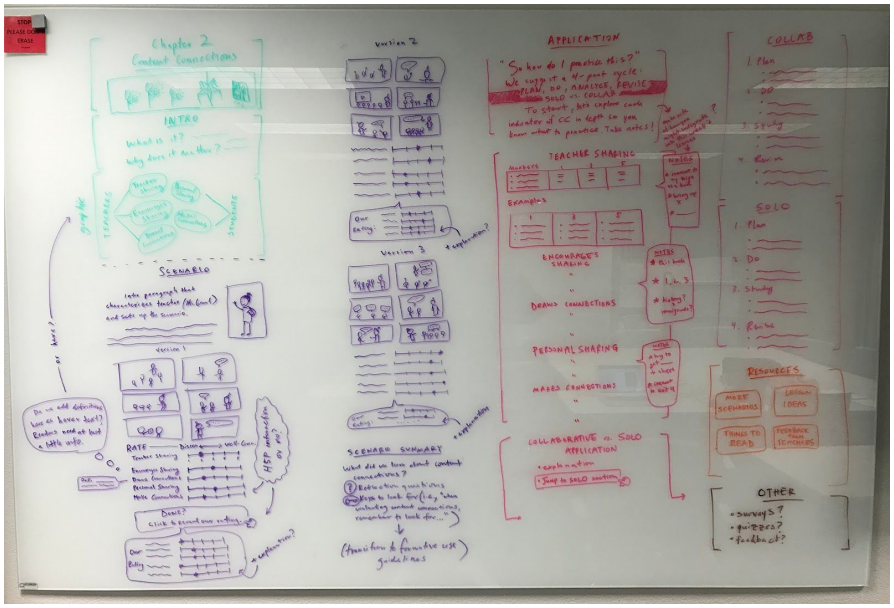
Design Representations/Prototypes

Mockup 1

The image below links to a Drive-hosted video walkthrough of **Mockup 1**, a preliminary design prototype/mockup of one of the chapters that we sent to Dr. Jensen. (length: 5 minutes)

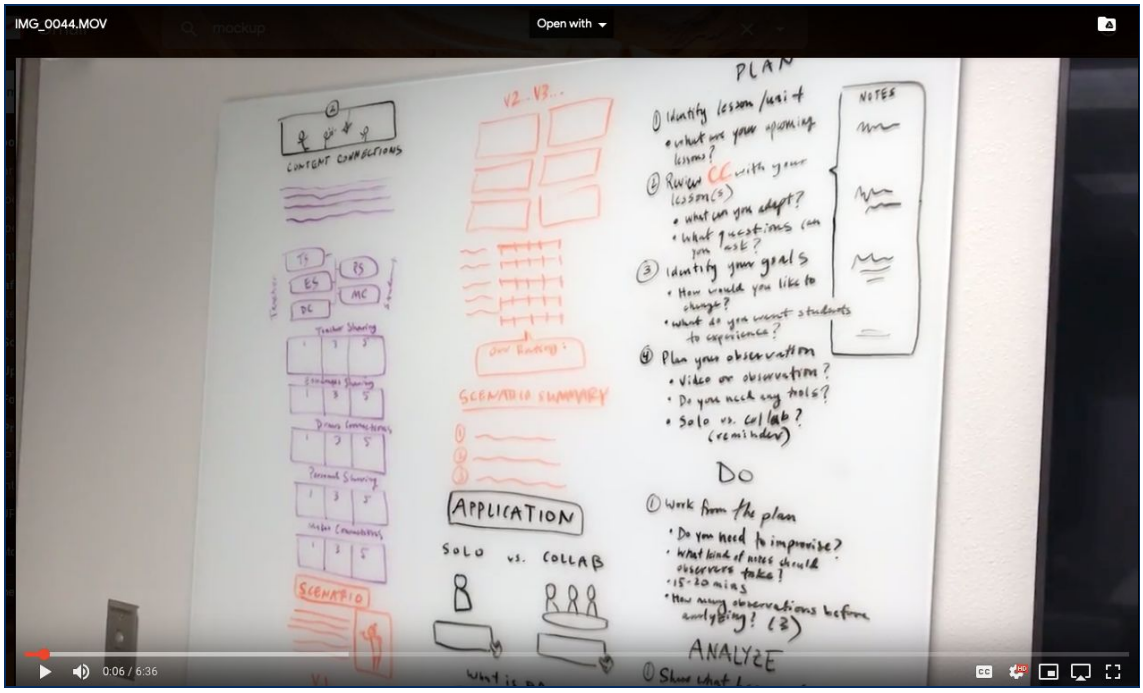


This image shows the full **Mockup 1**.

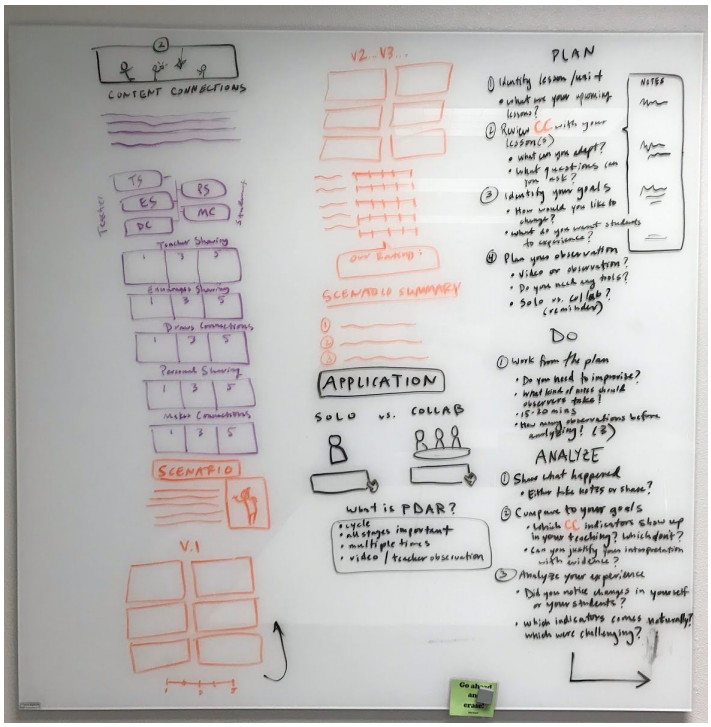


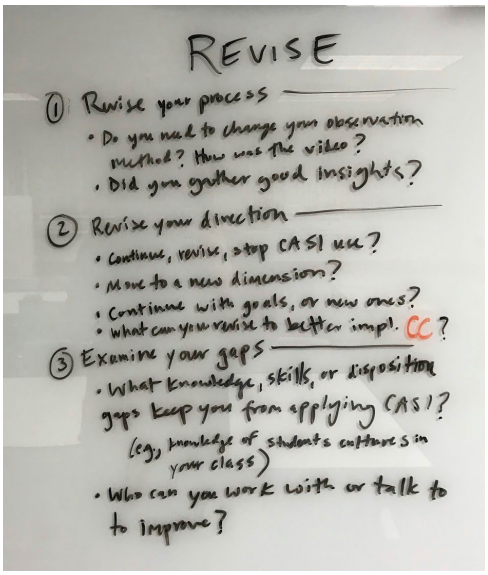
Mockup 2

This image links to another video walkthrough, this time of **Mockup 2**, the second prototype based on our discussion and critique of Mockup 1 with Dr. Jensen.



These images show the full **Mockup 2.**



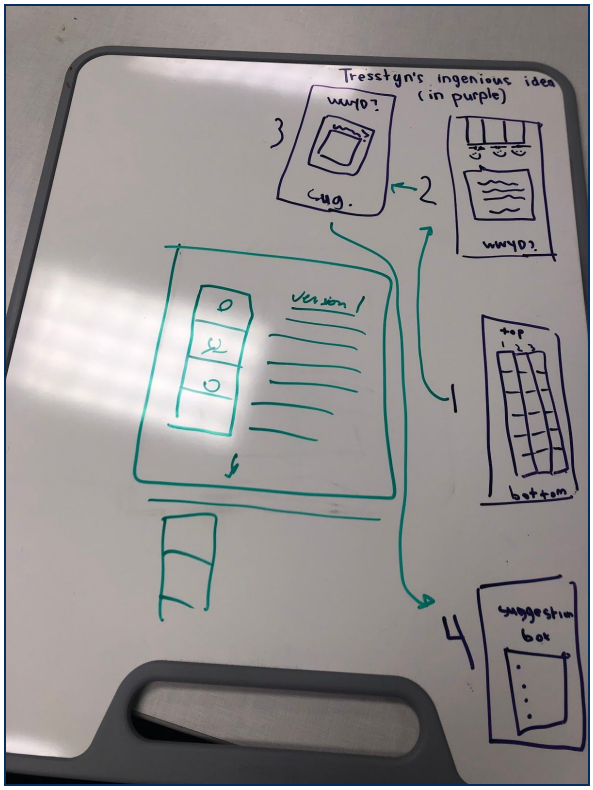


As you can see above, the mockup aligns closely with the design specifications. Mockup 2 aligns more closely than Mockup 1 because the design specifications take the additional client requests (moving sections around) into consideration.

- The three-part structure is most visible in **Mockup 2**.
    - **Purple**—Part I: Introduction, including the indicators (which were previously in Part II)
    - **Orange**—Part II: Scenarios, including three versions of the main scenario with sliders indicating learning checks (to practice scoring).
    - **Black**—Part III: In the Classroom, including PDAR introduction and our first attempt at using reflective questions to guide teacher lesson planning and observations.

Some higher-fidelity features are not included in these prototypes (e.g., expert quotes, printable versions, UX questions and surveys). Several of these and other features that are not shown evolved through discussion with Dr. Jensen based on the mockups.

The image below shows a prototyping session for the comic strip scenarios. We eventually settled on an adaptive 2x3 grid that is more mobile-friendly.



These images show our storyboarding process for the comics. After developing outlines for the main scenario of Chapter 2, we storyboarded the frames to help us think about the constraints of the comic strip. We needed to carefully write the script and directions for the artist to know exactly what needed to happen pedagogically in each frame.

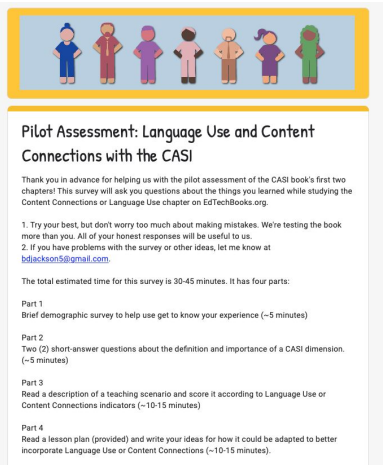
Appendix I: Assessment Reports and Instruments

Between May 5–18, I used three assessments to evaluate the learning goals: a post-chapter survey (45 minutes), group Zoom interview (60 minutes), and follow-up survey (5 minutes).

Survey Overview

The closed-book survey, which lasted approximately 45-60 minutes, measured teachers' learning on **Goals 1–4.** The survey had four parts:

1. Brief demographic survey to help use get to know your experience (~5 minutes)
2. Two (2) short-answer questions about the definition and importance of a CASI dimension. (~5 minutes)
3. Read a description of a teaching scenario and score it according to Language Use or Content Connections indicators (~10-15 minutes)
4. Read a lesson plan (provided) and write your ideas for how it could be adapted to better incorporate Language Use or Content Connections (~10-15 minutes).



Pilot Assessment: Language Use and Content Connections with the CASI

Thank you in advance for helping us with the pilot assessment of the CASI book's first two chapters! This survey will ask you questions about the things you learned while studying the Content Connections or Language Use chapter on EdTechBooks.org.

1. Try your best, but don't worry too much about making mistakes. We're testing the book more than you. All of your honest responses will be useful to us.
2. If you have problems with the survey or other ideas, let me know at bdjackson5@gmail.com.

The total estimated time for this survey is 30-45 minutes. It has four parts:

Part 1
Brief demographic survey to help use get to know your experience (~5 minutes)

Part 2
Two (2) short-answer questions about the definition and importance of a CASI dimension. (~5 minutes)

Part 3
Read a description of a teaching scenario and score it according to Language Use or Content Connections indicators (~10-15 minutes)

Part 4
Read a lesson plan (provided) and write your ideas for how it could be adapted to better incorporate Language Use or Content Connections (~10-15 minutes).

Note: Due to the length of the survey protocol, which branches into several tracks depending on which chapter the teacher read, I have not included a copy in this report. If you are interested in reading all the interview questions, you can access it here.

Interview Overview

Following completion of the surveys, each grade level group was invited to participate in a 1-hour Zoom interview. The primary purpose of the interview was to address **Learning Goal 5: discuss the practicality of the CASI book** (evidenced by recognizability, relevance, and feasibility/cost).

The text of the interview protocol is included below. You can jump to it here, or view the Google doc here.

Follow-Up Survey

After completing interviews, participants were sent a brief follow up survey. The survey gave them a chance to share any additional thoughts and asked them to rate their interest in working on the project with us in the future. You can access the survey here.

Survey Alignment

Learning Goal		Associated Question
1. Accurately define the given dimension.	➡	*"Based on the chapter, how would you define the CASI dimension [Language Use/Content Connections]? (E.g., If another teacher asked you to explain it, what would you say?)"*
2. Discuss the benefits and challenges of the dimension.	➡	*"From what you've learned, do you think applying Language Use practices would be beneficial for your students? Briefly explain why or why not."*
3. Use indicators to score a written teaching scenario.	➡	*Now let's practice scoring a teaching example using the [Language Use (LU)/Content Connections (CC)] indicators. Below you will find a descriptive scenario of a lesson. Read it carefully, either from the screenshot below or at https://bit.ly/LU_Scenario. You may find it useful to take some notes on what you observe happening as you read. Then, use the scales below the example to score it according to the [LU/CC] indicators. We ask you to briefly justify your answers.*
4. Generate ideas for adjusting/adapting a lesson plan to better integrate the CASI indicators.	➡	*Following the rubric below, you'll find the lesson plan and its associated Common Core standard. You'll notice that the lesson plan corresponds with the scenario you just scored. First, read through the lesson plan. Then, record some ideas for how you could adjust or adapt the lesson to better integrate [CC/LU]. You can also access the lesson plan at https://bit.ly/CC_LessonPlan.*

Interview Protocol (Full)

Introduction, Rapport Building

1. Thanks for participation
2. Ask how they are doing with COVID (school adaptations, daily changes, etc.)
3. Set expectations for the interview
    a. The purpose of the interview is to learn about your perspective on the content you read and your experience of the chapter. We will specifically focus on practicality of both.
    b. Time = 45-60 minutes
    c. Session = recorded
    d. I'd like you to respond to each other; this will be most productive as a conversation. I have questions I can ask, and I'll guide the conversation, but I don't want this to be a call-and-response or overlook anyone's insights. (Feel free to ask me questions as well?)
    e. Please be honest! We are testing the book more than you, so there are no wrong answers. All your feedback is useful. Please be reflective.
    f. I'd like to hear from everyone as much as possible.
    g. Compensation = mailed to you following completion of the interview

Backgrounding

1. Could you tell me more about your school?
    a. Racial/ethnic background of students and families
    b. Home languages of families
    c. SES of families
    d. Formal preparation of teachers in general to work with diverse learners?
2. Review what I learned from their survey responses? (e.g., years teaching)
    a. If appropriate, do they live in the district where they teach?
3. How did you come to teach at this school/district?

Introduction to Cultural Aspects of Teaching

As you're all aware, student diversity in US classrooms is now a reality more than an exception. We believe that is a good thing, but it also brings some challenges when curriculum and standards and teaching methods have been designed without these diverse students in mind.

The main problem we're dealing with is this: there is growing evidence that cultural aspects of teacher-child interactions can enrich development and improve classroom experience, but those cultural aspects of teaching have been hard to implement. Teachers need better resources depicting cultural aspects of teaching to learn in and from their practice to improve it.

Researchers and designers need to work with teachers to provide these resources. That's what we are trying to accomplish with this open resource textbook.

Now, what do we mean when we say "cultural aspects" of teaching? You may already have an idea of this, but we are referring to the aspects of daily teaching that are distinct from what we call "generic" or "effective" teaching practices. Effective practices are very familiar to you. They include, for example, routines for efficient uses of time--like transitions between activities--redirecting misbehavior, or providing students with personalized feedback to their responses during a class discussion. As you know, practices like these are important for all students to learn. But the ways they are communicated to connect or not with students' lived experiences, cultural practices outside of school, and identities matter as well.

These differences are what we call "cultural aspects" of teaching. That is what the CASI measures. You might think of the cultural aspects as "meaningful teaching practices." They include ways of incentivizing student participation, encouraging interaction, distributing authority in the classroom, incorporating their everyday languages, etc. These aspects affect the meaningfulness of classroom learning. That's where the name of the book "Making Meaning" comes from.

Research by Dr. Bryant Jensen and others finds that effective and cultural aspects are interconnected. We define "equitable teaching" as effective practices that resonate with the out-of-school lives of students of color and others from underrepresented groups. The CASI was created to support teacher learning to implement equitable teaching practices. It measures sociocultural interactions across 9 dimensions, and they're meant to be focused on one at a time, though they are all interconnected.

This book, including the chapter you read, is our first attempt at creating an instructional experience for teachers to help explain the cultural dimension and show what it looks like in the classroom.

You are the first to read it, so our interview today is about understanding what your experience was like reading the chapter and discussing the **practicality** of working on these cultural qualities in your real classroom. By "practical" we mean recognizable, relevant, and feasible.

We are really interested in your experiences—how these cultural dimensions are relevant in practice. You read (CC or LU), so that's what we'll focus on today.

First I want to talk about the topic of (LU/CC).

Recognizable (instrumentality): (how, if at all)

Did the idea of (Language Use/Content Connections) seem familiar or new to you? In what way?

Was this a topic you have ever discussed with other educators? (How did those conversations go?)

LU: Has language use in the classroom ever been a concern for you? How so? How did you respond?
CC: Has connecting lesson content to the lives of your diverse students ever been a concern for you? How so? How did you respond?

Have you known a teacher that seemed really good at (LU/CC)? What distinguished them? (habits, distinguishing characteristics)?

Relevant (congruence):

What has your job as a teacher already taught you about (LU/CC) before studying this chapter?

Specific examples/experiences of how (LU/CC) affects learning outcomes for diverse students?

Do you think focusing on (LU/CC) would help you be more successful with diverse students and families? How so?

Do you think (LU/CC) is an issue that other teachers or administrators at your school care about? Or would support you working on?
What kinds of topics does professional development at your school focus on? Could you see other educators caring about/wanting to work on (LU/CC)?

What goals does your school have? How does (LU/CC) align with those goals?

Can you describe a time when your lesson facilitated (LU/CC)? Or when it didn't?

Feasible (cost):

Okay, now I want to set up a hypothetical situation. Let's say we ask you to begin practicing (LU/CC) in your classroom next week.

- Do you feel prepared to do that?
- How would you do it?
- What knowledge or resources do you lack, if any?

What makes it difficult for you (or teachers in general) to practice (LU/CC) in the classroom?

What could make it difficult for you to practice (LU/CC) moving forward?
- Specific obstacles?
- Time costs
- Experience costs
- $$ costs
- Political/cultural costs

How difficult would it be to adapt next week's lesson plans to have more connected (LU/CC)?
- When would you work on those lesson plans?
- How would you evaluate your performance on (LU/CC)?

Did the chapter make a strong case for the practicality of (CC/LU)? Why/why not?

Book UX:
(Have the chapter open and screen-shared so they can point out specific features or sections. Feel free to ask about specific aspects like links, images, videos, resources.)

Now I want to talk about your experience of the online book, specifically.

Did you have any difficulty accessing the book? Did you view it online or as a PDF?

What do you think you'll remember most about this book in a month?

What did you learn from the book, if anything?
- What do you remember most?

What did you think was most valuable about the chapter?
- Dislike most?

What do you want more of?
- What do you want less of?

How would you feel if you could no longer use this resource?
- Very disappointed?
- What would you use an alternative if this resource were no longer available?

Have you discussed this resource with anyone? How did those conversations go?

What is the primary benefit you receive from using this resource?
What type of person do you think would benefit most from this resource?

How can we improve this resource to better meet your specific needs?

Question about comics?

- Did the comics help them see the concepts in practice? How did they respond?

END SCRIPT

Appendix J: Implementation Instruments

The only true requirement needed to successfully employ our final product is an internet connection. That said, we did provide our participants with instructions to help them complete the pilot successfully. The step-by-step process of implementation is detailed below, including the instructions given to the teacher-learners.

1. Recruiting Participants

Dr. Jensen reached out to his local teacher connections (particularly, those who had already worked on a previous study with him), inviting them to participate in the pilot.

> Hi _____. Hope you're well! I'm wondering if you and others on your team at _____ might be willing to participate in a simple study a grad student of mine is running. Would take 2-3 hours of your time (reading, survey, Zoom interview) and he'd pay you $100. The topic is culturally responsive teaching.
>
> Please let me know what you think when you get the chance.
>
> Thanks!
> Bryant

2. Participant Information Form

Once participants indicated interest, I sent them the following information:

> PI: Brenton Jackson, BYU IP&T Graduate Student
> bdjackson5@gmail.com | 703-303-6704
> Supervisors: Bryant Jensen, PhD, BYU Teacher Education
> Royce Kimmons, PhD, BYU IP&T
> Participant Information Sheet:
> Formative Feedback on Equitable Teaching Book Chapters
>
> You are being invited to assist Brigham Young University (BYU) by evaluating the effectiveness of two book chapters related to equitable teaching. These are the first two chapters of a free, open online book being created by BYU to help teachers learn about and improve sociocultural interactions with students. These chapters focus on adapting lesson content and language use to better serve students. Results of this study will be used formatively to help us improve the book as it continues to be developed. The timeframe for this study is May–June 2020. All communication and interviews will happen online because of COVID-19.
>
> Participation in this formative evaluation is entirely voluntary. If you decide to participate, you would be compensated for your time (details below). Please read the rest of this document

before you make your decision.

The study has three stages. We anticipate total time for participants will be about 3 hours over the course of a month.

Part 1: Studying the Chapters (1-1.5 hours)

We will send you instructions to access the book online and assign you a chapter to study (you can study both chapters if you like, but your participation only requires one). You will have 1-2 weeks to review the chapter.

Part 2: Complete the Survey (30-45 minutes)

After completing your review of the chapter(s), you will access a survey on Google forms that will ask you some questions about what you learned from the material.

Part 3: Participate in an Interview (45 minutes-1 hour)

After completing the survey, we will reach out to schedule an interview. These may be solo or group interviews, depending on whether other teachers from your school are also participating. The purpose of the interview is to discuss your experience and perceptions of the chapter(s) more in-depth, including questions related to its practicality. One or two members of the BYU team will interview you. We anticipate only having one (1) interview per participant.

Compensation

Participants will be compensated for their time with a $100 VISA Gift Card.

Contact for Further Information

If you have any further questions, please contact us via email at bdjackson5@gmail.com and bryant_jensen@byu.edu.

Thank you for taking the time to read this information. I hope you will consider helping us improve our book chapters by participating in this formative evaluation.

3. Selecting Participants

Then we narrowed our pool of interested teachers to 10, anticipating that some would not actually complete the pilot. We tracked their progress through each stage of the pilot in a Google Sheet.

4. Instructions to Begin Study

_____ and _____ ,

Your chapter is ready for your review! You are in charge of studying **Content Connections**. Here are your instructions with the appropriate links:

1. If desired, briefly review the Introduction chapter to get acquainted with the premise of the book (optional)
2. Navigate to the Content Connections chapter and begin your study. Recommended time for reviewing the chapter is **1.5 hours**. How you read it is up to you, but we suggest...
    1. **Take notes.** These could be content-related or reflections on your experience of the book. Your notes will be especially useful as reminders during interviews.
    2. **Be reflective.** What is interesting or challenging? What is especially useful or missing? What practical barriers (if any) do you see? How do you imagine your students or other educators would respond to this?
3. Once you have completed your study, please take the Pilot Assessment survey. Estimated time for completion is **30-45 minutes.**
4. Once you have completed the survey, send me an email (bdjackson5@gmail.com) saying you've finished everything. Then we will schedule the Zoom interview.

The deadline for phase 1 (all of the above) is this coming weekend. We ask that you complete your review/survey and report back by **this coming Monday, May 11.**

As a courtesy, please respond to this email confirming that you received these instructions. Send me any questions or problems you run into.

Thank you! I'm excited to work with you all.

5. Scheduling Interviews

Following completion of the survey, I sent emails to all participant grade level teams with an invitation to schedule their interview.

_____ and _____ ,

Thanks for your participation so far. I'd like to schedule a group interview over Zoom with you to review your survey responses and your experience with the _____ chapter. There are a few ways we can proceed:

1. If you already have a free 1-hour block where both of you are available between this Wednesday-Monday, we could schedule for that time.
2. If you are unsure of each other's schedules, we can use this Doodle poll to mark what times you are available: https://doodle.com/poll/q576teqdb4qec8g7

What works best for you? Looking forward to speaking with you.

6. Final Survey and Thank You

_____ team,

Thanks so much for our conversation earlier today. I learned from you and have great insights to share with Dr. Jensen and the production team.

Only one more thing to do: complete this short Follow-Up Survey. It should take 5 minutes or less. The survey will ask you for an address we can mail compensation to; if you prefer another way, email me privately.

The book is open access (edtechbooks.org/equitable_teaching), so feel free to bookmark and use it whenever you want. New chapters will appear there and you're welcome to share with friends and colleagues.

Thanks again for all your help. I'm inspired by your commitment to your students and I hope we can collaborate in the future!

Brenton

Appendix K: Evaluation Reports and Instruments

The primary stakeholder for this project is Dr. Jensen, who developed the CASI. A secondary stakeholder is Dr. Kimmons, whose platform is hosting the book.

Evaluation Criteria

Dr. Jensen's primary criteria for success was the practicality of the resource: that it demonstrated recognizability, relevance, and feasibility for teachers, and that they are able to use it in the classroom to improve their teaching. While the *ultimate* evaluation criteria of the full book will involve observing teachers using the CASI in their classrooms, the scope of this portion of the book is more exploratory, thus shifting the evaluation criteria. COVID-19 also meant we couldn't evaluate teachers in their classrooms. So, this project focused more on evaluating teachers' declarative knowledge and analysis of the chapters. Specifically, we evaluated how well the chapter design

- communicates declarative knowledge,
- prepares teachers to evaluate teaching examples using CASI indicators,
- prepares teachers to adapt lesson plans for CASI indicators, and
- demonstrates practicality.

Our assessments asked questions related to each of these criteria. Then I analyzed the resulting data under Dr. Jensen/Dr. Kimmons' supervision to determine 1) summatively, if we were successful, and 2) formatively, what changes should be made to the existing chapters and future designs.

As a secondary stakeholder, **Dr. Kimmons** was interested in evaluating usage of the chapters within EdTechBooks. Usage data was gathered automatically by the analytics embedded in ETB, but I evaluated it summatively (for our two initial chapters) focusing on:

- amount of time/focus spent on each portion of the chapter
- interaction with features like illustrations and links
- responding to/engaging with learning checks correctly or incorrectly
- positive user experience (UX) surveys

Product Evaluation Reports

All results from the surveys and interviews were collected in this Google Sheet: CASI Survey and Interview Findings. All of the teachers' responses have been de-identified. Because of the amount of data, all of the assessment results cannot be included here. A useful summary of relevant responses, scores, and interview quotes can be found in Evaluation Results. To see all of the raw scores, responses, and quotes, I refer you to the Google Sheet above.

The purpose of this section is to communicate the results of my evaluation as they pertain to **product** and **process**.

Product Evaluation and Recommendations

Results from the pilot indicate that the chapters, overall, were very well-received. After studying one chapter for about an hour, teachers were able to define and justify either Language Use or Content Connections, score scenarios fairly consistently, and provide targeted suggestions to improve the language use or content connections of a lesson plan. The current chapter design achieved the learning goals we set for it, including perceived practicality.

But that doesn't mean there is no need for changes! Via the interviews, teachers provided extremely helpful suggestions for changes, adaptations, features to add, and resources to develop—like editing certain examples to be more realistic, increasing emphasis on intentionality and avoiding teacher burnout, adding explanations for our example scoring, and creating a database of teacher videos depicting real, messy attempts to do Language Use and Content Connections in the classroom. These helpful suggestions are covered in more detail below.

Changes to Make – Overview

Things Teachers Liked	Possible Changes, Issues, Requests
• Measurable rubrics/concrete language • Lots of examples (1-5) • Multiple forms of examples (i.e., written **and** visual/comic) • Emphasis on dispositions (e.g., intentionality) • Easy integration for GLG book study or pre-service class • Option to video-record teaching • Validates experience of veteran teachers • "Goldmine of discussion" • Resources lists; there when you need it	• Real classroom videos (in addition to written examples) • Repository of lesson ideas • Explanations for 1-5 examples • More emphasis on dispositions (genuine interest, intention, etc.) • Advice for experienced vs. new teachers • Suggestions and adjustments for specific sections (Amazon example, 20 things example) • More on getting-to-know students • PDAR - Implementation • Use more current academic sources

Changes to Make – Quotes

Add real classroom videos (in addition to written examples)

I was gonna say the same thing. I don't know that because I guess. I don't know if I can read it and really visualize or like you could do this with this lesson versus seeing an interaction. Like I know when I go see other teachers teach or if like [Teacher 8] said, just snippets of videos, it's like, "oh, okay. That's what she meant." So just some more visual modeling versus like a theoretical application to the standard. Because I think like I could probably think of, you know.. and those are kind of the more academic assignments I feel like you get in teacher education like there's this scenario, what would you do, or like reading lesson plan to this. Whereas, like when I'm watching a teacher in a classroom, it's a lot more relatable and it's a lot more like "I can use that exact phrase. I'm going to use that exact phrase. I'm going to rely on that until I can make it my own. That's what I love seeing. I love seeing other teachers teach because then I get to see "Okay, I'm going to try, I can try that. Like I can imagine a day, a time of my day where I can try that out and I'm just going to do what that person did and see how it goes." Yeah, I like that.

- Teacher 9

And it would even be cool to see that lesson plan where he or she and put like okay here's three or four instances that I'm going to try to use their own language. And then, in practice, maybe they forgot one or two, but they did two of them. And it's like, "Okay, I could do that. I could start from ground zero and do one or two and then build up from that." But having it always just be this perfect lesson plan that, "yes, they said this in Spanish, and she responded in Spanish and back and forth," sometimes feels a little bit like the standard's set really high.

- Teacher 7

Yeah I would second that. But I would also say, I think there's a really nice balance of the explanation with the scenarios. And then I also like that there's also the visual scenario, the little comic format. I think it really kind of addresses it in a couple different ways. So if something makes like... and then the videos would do that even further. Because we all learn things differently. I will not watch a video. I don't care what's in it, I'm not going to do it. But if I can read about it, I'll read about it. And I would look at a comic as well. And [Teacher 2] would be exactly the opposite right, he would rather watch a video about it than read about it.

– Teacher 4

Create repository of lesson ideas (find ways for teachers to share their CASI ideas)

The biggest struggle I've always had is being able to think of things to do. So we'd have brainstorming sessions, and I don't know why I just have a block there or what, but I just always struggled coming up with things with our core. (...) But I think what would open it up to any teacher would just be (and this is kind of what I said a lot in my notes) a list of quick and easy ideas of ways that, in like 10 minutes or less, they can add this into their lesson. And I know it's probably not a 10-minute-or-less fix, but I don't... like one of the easy things was teacher stories and [Teacher 5] does a really good job of talking about his life and bringing examples in for the kids. And so I always was, like, "Well, I don't know if I should do that they're going to get distracted." But I noticed that they always remember the stories that I tell. They don't forget that. And so I think just like, even just a page of quick and easy solutions of how to connect with kids would be something that teachers that may not be interested would be more likely to approach.

– Teacher 6

I was talking to my husband about this because he's a high school teacher. And when I'm talking about... what was one of our math examples, like expressions or equations... I don't know, I just, I've gone through the math before and I've tried to figure out how I can apply it to daily life, so the kids can see why it's

important. And it's just so hard! So if people had already come up with some of those real life applications that would be amazing, because that's what we've had so many trainings. It's like, I don't, I don't know how to apply a planet to real life, and I should probably, but I don't know. (...)I was like, "I wonder if I post it on Facebook or something, who has ideas of how I could apply expressions to real life for sixth grade kids?" You know, opening it up to a bigger audience, more minds. (...) Because that's just getting all the minds, and then you have other teachers who are like, "Oh, I did this..." Anyway if that's possible, that would be really awesome.

– Teacher 6

Teacher 5: *Mr. Silveira is teaching his students about the move west and, you know, if that was part of my curriculum, that's an easy one. I mean, because we have so many students that move from a foreign country and they come in. And so the language, the culture, everything. So that was an easy one. But like what [Teacher 6] was saying, some of the other core standards, it's like, yeah, give us as much as possible, some concrete examples how to implement it.*
Teacher 6: *That would be amazing. (...) I feel like with language arts, it's easier to find texts and different things that appeal to your students interests, I don't know, [Teacher 5]. I don't know if you agree with that or not, but I feel like* ***math and science are the ones*** *where it's the most difficult to make those connections. For me anyway.*
Teacher 5: *(...) You're right, math and science. Those are the two big content areas, I think.*

Add explanations for indicator examples

Yeah, I just like to see a little more, I mean, I know that it needs to be accessible and usable and that's scary for people, but I would like to see a little more discussion about why certain... what is good about certain things and what can be made better. Also going back to what [Teacher 2] was talking about with the answers, like, why is this the right answer? Why is this not you? Know what I mean? I just think that that's an important part of learning for everybody. (...) When I was reading it, to me, the most valuable sample is when she started engaging the kids and having them look at the pictures and ask questions and really generate a lot of interest. And I just was thinking like, "Why isn't there a discussion in here about what makes one valuable, but another one more valuable or in a situation? Because I thought that there was just a goldmine of opportunities and that that particular one was the first one that struck me.

– Teacher 3

I think it'd be interesting if, you know if we went back to Mr. Henricksen and you had just a short clip of what a 1 looks like and what a short clip of what a 5 looks like. And then maybe a discussion about the spectrum in between the two, so that teachers can understand that "this is a really poor one, this is an amazing one." We can fall in between someplace, and that's okay too. So that you don't define each level, but maybe the worst and the best of it. And like [Teacher 3] was saying, it's objective, so it's easy to critique somebody you don't know in some random classroom versus each other.

– Teacher 2

And with that, you know, when I came across an example I kept reading, going over and over the number one where it wasn't a good connection and comparing that to the number five, where it was a good connection and trying to see, do I do some of those number five things? And again those examples. One was social studies, you know, one was the posada, so those are easy. But again, like that again, [Teacher 6] said that the math and the science are always tricky for us, integrating those culturally.

– Teacher 5

Emphasize dispositions (genuine interest, intention, etc.)

[**Intentionality**] *Another thing that I would really like to see is, it's been my experience when we are working with all the different backgrounds, how intentionality is so important. It's so important all the time,*

but it is so much more important when we are working with these diverse backgrounds and all the different cultures. You can't just pull something out and say all this is going to be a great way to connect or I have some pictures or I have a video. You have to really be so intentional about what it is that you are choosing to help engage the students. And I think that I didn't see enough opportunity in just the chapter that I read, you know that part that I read... how important that is, that that training is there, in that intentionality part of it.

– Teacher 3

[**Genuine interest**] *Yeah, I'm gonna piggyback off of that as well. And I don't know how you say this nicely without offending people. But you know specifically on page four, I had highlighted. You know, teachers afford these connections by demonstrating a genuine interest and I highlighted genuine interest because you can't fake that in this profession. And the example that comes to mind, I think is, [Teacher 4] and [Teacher 1] and I know of a teacher who had her doctorate, and she came and she taught and she left the school mid-year. She had all of the tools I think academically but I don't know that she really cared for our population. And she came from a district that was primarily Caucasian and primarily upper middle class socioeconomically and it just, it didn't work out. But it's because I think the genuine interest in the students and their lives and how to make those connections with them just wasn't there. And I think we all know teachers, all four of us, who genuinely don't care about kids that are in the profession. Unfortunately.*

– Teacher 2

[Appropriation concerns] *I did resonate a little bit with the experience of that teacher* [Student 2's example] *who had started saying she had tried to use a couple phrases, but she wasn't super fluent or you know, she doesn't look doesn't look like someone who would speak Spanish. And I think a lot of teachers, at least in my ideas or perspectives, would have that worry that they would come across as trying to be fake like trying to be someone in their Spanish culture that's really not. But it was cool to see at least in the reading that a lot of these students, I mean, they're young and so they just resonate with that they like hearing things they're used to. They like seeing their teacher, try to be a part of their life more than just at school. But I think validating that experience would be helpful for some teachers that maybe don't feel like they can say anything in another language because they haven't lived in that closer. They don't know as much as the students do.*

- Teacher 7

Tailor advice for experienced vs. new teachers

[New teacher burnout] *The other thought. And I don't know if it's too much of a tangent, but thinking about it as like a first year teacher from the perspective of using this as like a college textbook. I fear, just a little bit about the possibility of teacher burnout when I read this chapter. Because if I felt like I had to make this content connection in every lesson of every day, I would totally burn out. And it was addressed later in the chapter. There was just a little short blurb. But I would think that you'd put that earlier, like start with one lesson a day and go from there. But it's not reasonable to do this with every lesson of every day.*

– Teacher 2

[**Value of experience**] *[Teacher 2] and I talked a little bit about it as well being good teaching. You know, a lot of what we read are things that we learn and the years we've put in teaching that making things relevant is going to help students understand it better and I think as I work more with these diverse populations, I start to realize exactly how much they need that connection. They need the connection to the content because as far as they're concerned, some of the things we're talking about might be the Moon. I mean, you know, as far as their experiences are. And they're so different from any experiences that we bring to the table.So finding that connection to relevance is absolutely critical. I think that the chapter was very easy to read. I think that the examples were very easy to follow. I don't know... the trick being, you know, we're a group of experienced teachers. I've been teaching for 19 years, and making connections with students is my biggest bandwagon. And trying to bring those connections to them as well into the content... So I don't know from the lens of a first or second year teacher who really would need*

this. I don't know how I would have... like if it would have been as friendly or clear as it was to me after 19 years of teaching.

– Teacher 4

[**New teacher experience**] *No, I totally agree. I feel like the big things that are coming up are "Okay. How are your students doing with their test scores? Let me see your assessments. Let me see those lesson plans. Do they have A, B, C, D, E, F, G, all of these things in them?" And so those are the things that you're worried about and you're constantly thinking of and preparing day to day. But the things that honestly might matter most, like she said, are those relationships and making sure "Hey, you're my student today. And so let's make sure you feel comfortable in sharing that experience that you had at home or sharing how whatever happened." But I think, yeah, as a new beginner, it's just a little overwhelming. And so that might be something that just gets pushed to the side—not because I don't care about it and not because it's not important, right... it's just there's so many other things that you have to check off that to-do list each day that I might not get to. So yeah, I just agree with a lot of what she was saying. But I'm thinking of my college time... And I almost wish there was a portion that was like "Okay, well here's everything you have to do all billions of all the things you have to do. But here's some that are actually really important if you just spend a little bit of time on, and making sure you have those relationships with the parents early on, you have relationships with your students, you do encourage them to speak Portuguese, Spanish, whatever is their home language, those things actually would encourage everything else to go better the whole school year. So, yeah. I like that perspective at least.*

- Teacher 7

More on getting-to-know students

I think what [Teacher 5] said is true. I think implementing it... It just depends on what you're doing, I guess, but I don't think implementing it would be too crazy, but it's the planning that I think of. But I don't know, I think something I put in my notes was trying to figure out what students are interested in. And I think [Teacher 5]'s a lot better at this than I am. And throughout the year, you get to know the kids. You really get to know what they're interested in. But in the beginning, it's tricky before you have a relationship with them andI we give them surveys at the beginning of the year. You know those ones you print out, [Teacher 5]. I don't know if you experienced this. But a lot of times with a lot of categories, they'll leave it blank because they don't know. And we'll have them write letters to us at the beginning of the year, like, "what do they enjoy? What do they wish we knew? What did they like about school? What did they do at home?" you know, trying to figure out their background and their life. And a lot of them like to sit at home and play video games or read books. And so I guess my biggest thing was figuring out how to pull things from students that we can really integrate into lessons, like I was curious how I could do that. So I could really get things that I can pull into lessons, if that makes sense. That was my biggest... I think that would take time, but I would love to know how to do that. But I think that's the biggest thing: figuring out how to get these things from the kids to be able to use, if that makes sense.

– Teacher 6

PDAR/Implementation

[Book study implementation] *As I read that that's exactly how I read it, I saw the power in this being something that would be a book study, or my question was, if it's a pre service book is there a handbook that goes with it for the instructor that's working with the students? And the reason why I was thinking that as I was looking at the teacher samples that were used in there. And I think there is a goldmine of discussions in those samples as far as what makes one perhaps more valuable in a certain situation than another or something. And that's where I see some real opportunities to make this impactful for people, discussing exactly those different samples and all of that I saw in the chapter. I wanted to go more in depth than those*.

– Teacher 3

[Book study with GLG/PLC]
Teacher 1: *Yeah, I think it's a good idea. First of all, to just do a book study like [Teacher 4] was saying as a grade level, you know, as a small group, and then later in the future get together as a faculty and have this big discussion.*
Brenton Jackson: *Okay, can you anticipate teachers being resistant to that? For example, the ones that you said may not be interested or work these topics being resistant to that.*
Teacher 1: *Yeah I can see that.*
Brenton Jackson: *So maybe, maybe starting it at a smaller group level would enable to remove some of those barriers before like ever discussing it as a faculty level thing, perhaps.*
Teacher 1: *Yeah, because as a grade level like [Teacher 2] said, as a great level we know each other better than the rest of this school, so we can have a nice discussion, become honest, and we can develop that trust that we need in ourselves, you know, and then we can take that out of our comfort zone.*

[Peer observation discomfort]
Brenton Jackson: *And part of the implementation in [PDAR] is to actually have either someone observe you teach that lesson or have a video camera setup to record you giving that lesson that later on you can look through and see, like, "Did it work the way I thought I was going to go? How are students responding?" Talk to me about the feasibility of that, or potential costs.*
Teacher 4: *I think a big cost is if somebody's coming to watch, people are very reluctant, there are very few people who are willing to have someone come into their classroom without feeling uncomfortable. Self-analysis with a video camera, I think more people would be willing to do that. But I do think that's a thing.*

[Admin support] *Yes. I mean, I think our administration absolutely is aware of the value of this and very supportive. And I think that there are people peppered throughout the grade levels that agree and are really, really solid with making content connections. I also think that we have the entire spectrum, all the way down to teachers who are very unaware of cultural relevance, who are also very well aware of things outside of their own culture. Their monochromatic chromatic view of education. So I think, I think we have excellent administrative support. I think we have several teachers who'd be interested. I just also think we have a lot of teachers who could use a lot of support in this area, but potentially don't realize it.*

– Teacher 4

[Need for training] *Yeah. I also think that to use a tool like this requires a lot of training. Because so often we're looking for other things that we would consider good teaching. But if all we're looking for is the content connection or the questioning, or whatever it is our minds tend to start thinking about, oh man, [Teacher 4]'s not noticing someone in the back like they're off task but off task behavior wasn't our concern, it was just the content connection.*

– Teacher 2

[Need trust between teachers, students]
Teacher 3: *I think, for sure, [experience] can be. That's one of my concerns when we start talking about equity. I start thinking about restorative practices and we start having, you know, these really deep, meaningful conversations with kids, which I am absolutely in favor of, but it takes training. It takes experience. Questions come up, conversations come up, that can really kind of take someone aback, sometimes, or if you don't have a certain level of background experience and knowledge about somebody's culture and their upbringing, answering those questions and going into some of those areas... It could come at a real cost for the students too. And so I think that there needs to be... this kind of goes back to my having the conversation stuff. There needs to be a lot of practice in the pre-service classroom, or in a Professional Development kind of place, where teachers get in the weeds a little bit and help each other, figure out how to get out in a way that's safe for the students.*
[Teacher 2]: *I think the problem with that, though, [Teacher 3], is for us to have those honest conversations as a faculty also requires* ***a lot of trust*** *between each other. And I think we're super lucky in 5th grade, where we'll just spit whatever comes out and we can put our foot in our mouth later and apologize, but I think like in a faculty meeting setting... I don't know that I would feel safe to share some of my feelings about certain topics, based on that audience. And the same goes for our classroom, right? It's that*

underlying trust piece. They really have to trust you to guide them, and it's super hard when our values don't align necessarily with the values they're taught at home. And for us to navigate that, it's super hard.
Teacher 3: *Which is why I think there's gotta be a way to have that some have training in the background, for that very reason. You're right.*

Suggestions for specific examples/sections

You know, what was funny about that one was, as I was reading that scenario, I was like, "oh yeah, I totally just went to the Amazon last summer..." Like I don't know that many teachers that have done stuff like that. So I thought it was a little bit out there. I do see the value of the discussion, but I was like...
[Teacher 3] *Well, and then there is that connection to that you run into as if you are a teacher who is lucky enough to have had the opportunity to go to the Amazon... sometimes when you bring that up with your students, that's another way where they can't get to that at all. Some of them are like, "I don't even know how to start listening to you. How did you get the opportunity to do that?"*
[Teacher 2] *Yeah, they're like "I've never been out of Utah, so I don't know..."*

– Teacher 2

I've never taught lower grades, but the scenario with "the teacher asking kids to bring 20 things from home" sounded a little disastrous to me as far as practicality in an actual classroom. So I don't know if that was a lower grade teacher that wrote that. I don't know. [Teacher 3] or [Teacher 4], have you taught lower grades? And have you ever thought about asking kids to bring 20 small objects from home?

– Teacher 2

I'm looking at the scenario with the rocks and Mr. Henrikson specifically as I'm thinking about this. All of these scenarios from one to five all say due to questions that he asks. But there's no examples of what he's asking specifically to elicit responses that he got in each of these scenarios. And for him to get the responses from scenario five, which was the best one where kids were actually making those connections to the content and each other, your questioning strategies have to be like [Teacher 3] said, really intentional, really focused, and that takes time. It's not just "what do we know about rocks" and let's move forward from there. It's like, how many? What can you see here? Describe this. And so it'd be really interesting if in that specific scenario, they included some of those questions that he asked to show the different levels of questioning that are required to get those connections.

– Teacher 2

Use more current academic sources

Teacher 3: *Sorry, one other thing I'll make it really quick, as you're moving forward. One of the things that I was thinking about is, and this kind of goes to what [Teacher 4] talked about at the beginning, I've been doing this, this is what I do as a teacher, this is what's powerful for me—making connections. This is really kind of how I always try to come at things. And I kind of felt like we've been talking about this for a long time. And part of it has to the fact that I've been doing this for a long time, but I was struck by the references that were used weren't to me as current as I thought maybe they should be.*
Brenton Jackson: *Okay, so like the academic sources.*
Teacher 3: *Uh huh.*

EdTechBooks Evaluation

EdTechBooks performed very well for our teachers. The vast majority had no problems at all. A few teachers offered some suggestions:

1. Is it possible to see the learning check answers with the PDF download?
2. Is it possible to add more explanations for the indicator examples? (e.g., this could be popover text, accordions, etc.)
3. Is it possible to create learning checks after the main scenarios that allow teachers to score the examples themselves? (e.g., Likert-style learning checks with correct answers shown, or an option to “check scores”)

Analytics

ETB Analytics showed that the teachers didn’t engage considerably with learning checks and resource links. Some did, and their responses were generally on-target and productive. But the majority didn’t answer the learning check questions (or their visits weren’t tracked). Most did not respond to the UX survey at the end that asks readers to rate the chapter.

Note that we did not encourage or discourage teachers from completing learning checks or in-chapter surveys; we wanted to see whether they would interact with them on their own.

This evaluation suggests that

1. Teachers didn’t value the questions and surveys, or
2. Teachers were in a contrived environment and felt they didn’t “need” to interact with questions and surveys, or
3. Some teachers’ responses were not tracked

Answering these questions would require a more targeted evaluation. One useful takeaway is this: we could ask teachers to help us design learning checks that would be more useful for them.

Process Evaluation and Recommendations

Writing a CASI Chapter: 10 Do's and Don'ts for the Design Team

	Do		Don't
✔	Train with the CASI early and often. Our favorite method: score teaching videos individually, then discuss together.	✘	Read over the dimension a few times and assume you know it; stop training with the CASI once you start writing.
✔	Start writing as soon as you can. It will help you learn and identify questions and misunderstandings.	✘	Wait to be "perfect" at the CASI before you start contributing to development.
✔	Finish the scenarios first so that the illustrator can begin working on them.	✘	Keep the illustrator(s) waiting on the writers.
✔	Break down the chapter into smaller, week-sized tasks, possibly in the form of a product backlog. Write them down (we used Trello). Then divide and conquer and report back *often* (throughout the week).	✘	Try to all write the same sections together. Take on huge tasks ("I'm going to write Scenario Version 1!) without breaking them down.
✔	Communicate throughout the week.	✘	Wait until the weekly meeting to communicate what you're working on.
✔	Set a firm deadline (I believe 2.5 months per chapter is a good stretch goal, depending on team size). Then work backwards and plan weeks.	✘	Say "we'll see how it goes" and let weeks slip by without progress or communication.
✔	Send small features to Dr. Jensen and the rest of the team *frequently* for approval and advice (e.g., pitching a few options for a Common Core standard before you start outlining)	✘	Write huge sections of the chapter before asking for approval (e.g., picking a standard and writing a scenario or starting illustrations before you pitch it to the team)
✔	Revise past chapters/sections based on new information and learning. Think divergently: how could you do this differently?	✘	Treat past chapters and designs as if they're set in stone.
✔	Take notes—often—on scenario ideas, useful resources, and especially CASI questions or misunderstandings.	✘	Tell yourself "I'll remember that idea, question, useful video, podcast, or website for the next chapter."
✔	Design for real teachers.	✘	Treat it like a school project.

Appendix L: Budget and Timeline

This is the budget for the CASI book project as a whole, which includes my portion of the project (Y1 and half of Y2) and extends beyond it to include all of Y2:

	Year 1	Year 2	Total Years 1-2
Student Wages Undergraduate students: 3/$13/15/14(Y1)45(Y2)	**$9,360**	**$26,325**	**$34,515**
Student Wages Total	**$9,360**	**$26,325**	**$34,515**
Project Total			**$34,515**

This is the proposed budget and timeline for just my project (July 2019 – June 2020):

Phase	Dates	Activities	My Hours	Hour Cost	Team Hours	Hour Cost
Phase 1: Project Backgrounding and Building Team	July 1– July 31 2019	CASI backgrounding, define project scope and hiring needs	8 per week	$608	-	-
	Aug 1 — Aug 31	CASI backgrounding, hire 2nd writer, establish project timeline	8 per week	$608	8 per week (1 student)	$416
Phase 2: Design and Develop Chapter 2: Content Connections (CC)	Sept 1 — Sept 30	Hire 3rd writer, visual artist; outline content for Chapter 2: CC	10 per week	$760	28 per week (3 students)	$1,456
	Oct 1 — Dec 31	Develop written and visual content for Chapter 2: CC	10 per week	$2,280	28 per week (3 students)	$4,368
	Jan 1 — Jan 31, ‘20	FInalize Chapter 2: CC content for EdTechBooks	10 per week	$760	26 per week (3 students)	$1,352
Phase 3: Design and Develop Chapter 1: Language Use (LU)	Feb 1 — Feb 29	Evaluate/adapt project workflow; outline content for Chapter 1: LU	12 per week	$912	26 per week (3 students)	$1,352
	Mar 1 — Mar 31	Develop written and visual content for	12 per week	$912	26 per week (3	$1,352

		Chapter 1: LU			students)	
	Apr 1 — 15	Finalize Chapter 1: LU content for EdTechBooks	12 per week	$456	26 per week (3 students)	$676
Phase 4: Testing and Evaluation	Apr 16 – May 31	FInalize participants; run pilot; run final test; schedule and complete interviews	12 per week	$1,368	26 per week (3 students)	$2,028
Total:			456 hours	**$8,664**	1000 hours	**$13,000**
Combined Total:						**$21,664**

Actual Expenses

Our actual budget was fairly consistent with the proposal, except that we underspent from what I budgeted.

	Proposed Cost (Jan - June)	**Actual Cost** (Jan - June)	Diff.
Brenton	$4,408	**$4,145**	**–$263**
Student team	$6,760	**$6,212**	**–$548**

Actual Timeline

Our actual timeline aligned closely with the proposal until around May, when BYU closed because of COVID-19. Two team members moved home, and we ended up around 2 weeks behind schedule delivering the completed chapter to teachers. But the Pilot took less time than I anticipated, so we ended up where we wanted to be.

	Proposed Timeline	**Actual Timeline**	Diff.
Complete chapters	April 15	**May 4**	**+19**
Begin pilot	April 16	**May 5**	**+19**
Complete pilot	May 31	**May 18**	**–13**

Project Management

I adapted Agile PM approaches for this project, creating Kanban boards in Trello to track our efforts.

After developing a product backlog with Dr. Jensen, who serves as our product owner, we chunked the work items as much as possible into deliverable features and rated them according to cost (difficulty/time) and importance. After organizing according to these ratings, we had a prioritized backlog which we used to populate our “Doing” board. There was a work-in-progress (WIP) limit of 10 work items for the Doing board, each of which (ideally) had a label to indicate which part of the overall chapter it fed into.

At standup meetings, team members reported on the features they completed, were still working on, and any obstacles they needed removed to continue working. My job was to frequently ask and gauge where those obstacles were and do all I could to help remove them. Additionally, I met frequently in-person and over Zoom with Dr. Jensen to resolve confusion, get necessary approval, and get guidance for content development. We continued this process on monthly cycles, adjusting the product backlog according to our weekly output and Dr. Jensen and Dr. Kimmons suggestions.

In my modified role I was both PM and a lead content creator, which I recognize is not ideal for Agile. On a team this small and with our constraints, I think that dual role was unavoidable.

Below is a screenshot of our modified Kanban boards on Trello. Click here to access the boards in the app.