Adaptive Courseware Implementation Guide
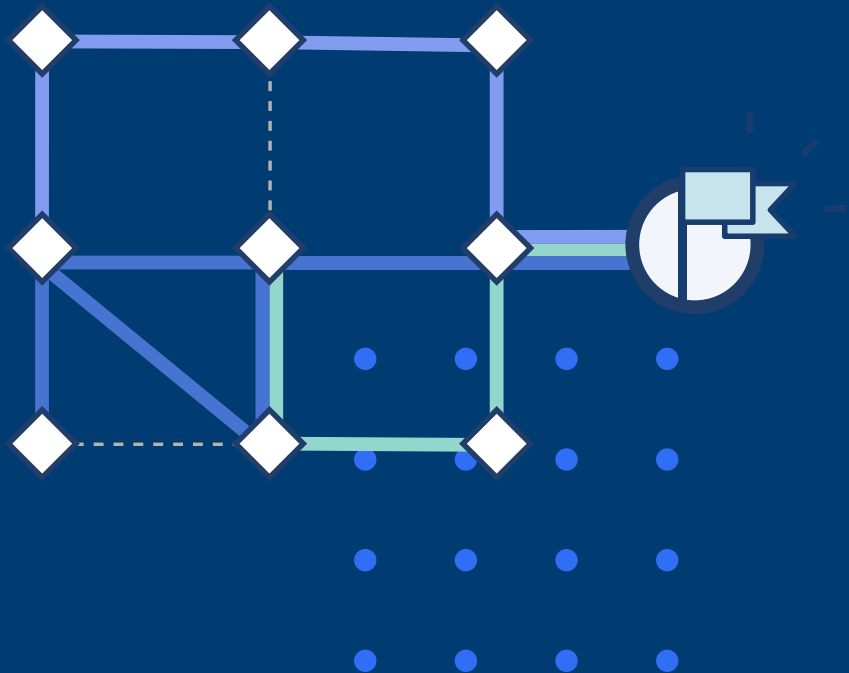
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Click here to access the full Adaptive Courseware Implementation Guide — including supplemental materials and interactive quizzes — on Solve, the Every Learner Everywhere Network's library of digital resources.

Introduction to the Guide

What is Adaptive Courseware?

An introduction to the Adaptive Courseware Implementation Guide, including background context and key terms.

Welcome

Every Learner Everywhere (ELE) is a network of partner organizations that are committed to improving student outcomes for Black, Latinx, Pacific Islander, and Indigenous students, students impacted by poverty, and first-generation students. This resource is a guide for Course Instructors to center racial and socioeconomic equity and student voice in the adoption and implementation of adaptive courseware. After years of implementing adaptive courseware at various levels of scale in gateway general education courses, Course Instructors and institutions have several lessons to share with those at the beginning of the implementation process. This extensive resource will provide you with practical strategies and resources to implement adaptive courseware with an equity-minded and student-centered approach.

The COVID-19 pandemic makes the work of educational equity and racial justice supported by evidence-based teaching with digital courseware more difficult, but also more important. The authors of GlobalMindEd's Student Speak Report summarize how minoritized and poverty-impacted students are coping with an increased digital learning load during this time:

> **The overarching observation was students were carrying the weight of a complex time in history. They were being directly impacted but using the impact as fuel to keep going. There was certainly a "press forward while weary" sentiment. Most students expressed the difficulty of navigating the unknown (i.e., the future, when/if in-person learning would begin, how to leverage academic resources while in a virtual environment, etc.). The drain of the balancing act of school, employment, and societal and personal crisis was palpable.[1]**

Adaptive Courseware Benefits to Students

Adaptive courseware is a digital instruction tool that includes instructional content, formative and summative assessments, and collaborative components. Based on the student's interaction with the tool, adaptive courseware modifies their learning path to maximize mastery of learning objectives and course content. At the same time, courseware provides faculty with real-time data about their students' learning and progress so that they may modify their instruction as needed and implement meaningful interventions with students. Having access to real-time data is also an opportunity to understand the needs of your students, especially racially minoritized, poverty-impacted, and first-generation students.
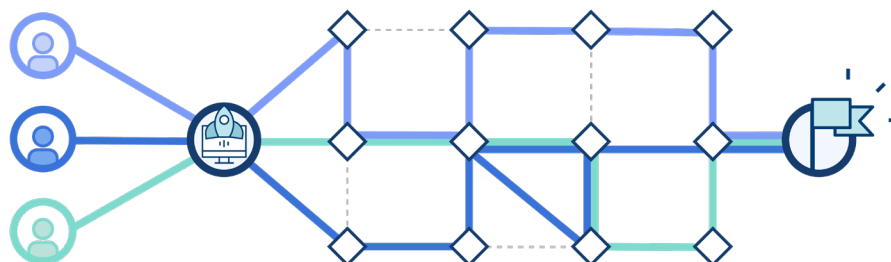
Based on the student's interaction with the tool, adaptive courseware modifies their learning path to maximize mastery of learning objectives and course content.

Institutions are beginning to see improved course grades and decreased drop, fail, and withdrawal (DFW) rates in foundational gateway courses in subjects such as biology, psychology, mathematics, and statistics. And further research into the adoption of adaptive courseware in institutions suggests that it can increase student outcomes specifically for racially minoritized students.[2][3][4]

Institutions that adopted adaptive courseware in some core gateway courses are also seeing gains in retention and course pass rates for students and racially minoritized students. Public institutions such as Arizona State University (ASU) have reported significant gains in retention and pass rates in college algebra and biology classes following course revisions that included the implementation of adaptive courseware. When ASU revised its non-majors biology course using adaptive courseware, pass rates increased 24% and withdrawal rates decreased by 90%.[5]

At **Clark Atlanta University** ⧉, a course redesign of the General Chemistry sequence involving adaptive courseware resulted in higher student grades, including a more than 20% increase in students who earned a B compared to previous years. Students indicated that they felt the adaptive courseware was a key component to their learning in General Chemistry.

While institutions are seeing an increase in positive student outcomes with the courseware, students are also noticing how the adoption of digital adaptive tools impacts their learning experience. Students see how adaptive courseware can increase their engagement in instructional content, provide them with increased flexibility to complete course work, and bring down the cost of textbooks.

The use of adaptive courseware in the classroom can support student learning and increase student outcomes in a number of ways. First, the courseware can increase the students' motivation through increased engagement with the course content, providing them with agency and choice over their learning experience.

> I feel like I'm more engaged in my geology course because of the courseware. There are not only photos, but also videos and activities that you can do instead of just reading from the book where you may forget things after you've read them. Also, the courseware makes you review what you've already learned at the end of the lesson, and I like that.

— Adriana Rodriguez, Northern Arizona University

Courseware can also allow students greater flexibility around where and when they access their course materials, assessments, and assignments. Due to increased demands for time and attention, students need instructional tools that can be flexible within their lifestyle. Many courseware tools allow for students to have their content across multiple devices and allow for offline downloading in the event a student does not have access to uninterrupted broadband connections.

> Something that I've found great about the adaptive courseware is I can be sitting in my bed at midnight and learning things that my TA might not be able to explain to me as well, because there's a video that shows exactly what I need to learn. Or I can do my homework sitting in a lobby of a hotel, or at a restaurant or just wherever I need to have it done. Because I don't have the time to drive to campus or sit in the library for four hours and focus on one thing, and it can be at my own pace. And I can complete it wherever and whenever I desire.

— Sarah Hamilton-Ridgeway, University of Mississippi

College students today are managing a multitude of responsibilities due to a number of factors, including the steady increase in the cost of living.[6] When implemented well, adaptive courseware can be a cost-saving tool for students.[7] This is important as the price of traditional textbooks has continued to increase in recent years.[8] Racially minoritized and poverty-impacted students are especially affected by this increase as many students have to choose between purchasing supplies to continue their education or paying for basic needs such as food, housing, and health.[9]

> I think [courseware] is much cheaper than a lot of the books that I've had, and I also liked that many courseware products provided a two-week free trial. A lot of students who were on the fence about whether to take a class were able to cancel their trial or get a refund. The fact that you get to test it out and decide whether you want to take the class or not and then save your money is really beneficial, I think.

— Ayana Duskutato, Northern Arizona University

Adopting adaptive courseware into courses can see promising results on the teaching and learning experience for students. Institutions and Course Instructors implementing adaptive courseware need to be mindful of the student experience while using the technology and how it is impacting their experience in the classroom.

Terminology

There are several terms that will be frequently used throughout this guide. While these terms are not all-encompassing, they will provide you with a foundational equity-first language to aid in your understanding.

TERM	DEFINITION
Adaptive courseware	Adaptive courseware is a digital instruction tool that includes instructional content and formative and summative assessments. Based on the student's interaction with the tool, it modifies their learning path to help them achieve learning objectives in a way that is best suited for their learning preferences. These systems also provide faculty and students with real-time data about the students' learning and progress, enabling faculty to modify their instruction and implement meaningful interventions.
Backward Design (Understanding by Design)	An evidence-based course design method that "offers a planning process and structure to guide curriculum, assessment, and instruction. Its two key ideas are contained in the title: 1) focus on teaching and assessing for understanding and learning transfer, and 2) design curriculum "backward" from those ends."[10]
Digital learning	Digital learning is any instructional practice that effectively uses technology to strengthen a student's learning experience, including a broad range of content and communication tools, curricular models, and instructional strategies.
Equity	Equity generally refers to creating opportunities for equal access and success among minoritized populations by providing them with specific, targeted resources. Rather than placing the burden of 'keeping up' on students, equity asks us to examine how higher education has developed its teaching, policies, funding, and curricula in ways that intentionally disadvantage some students over others. Teaching with equity includes the following guiding principles:[11] 1. Recognizing the ways in which systemic inequities disadvantage minoritized people in a range of social institutions or contexts (education, employment, healthcare, the criminal justice system, etc.). 2. Reframing outcomes disparities as an indication of institutional underperformance rather than students' underperformance. 3. Not attributing outcomes disparities exclusively to students or perceived deficits in students' identities, life circumstances, or capabilities. 4. Critically reflecting upon one's role and responsibilities (as a faculty member, student affairs staff, administrator, counselor, institutional researcher, etc.)

Continued on next page...

TERM	DEFINITION
Equity-minded	Being equity-minded is a shift in mindset where educators recognize racial and socio-economic inequity in student outcomes and remove institutional policies and practices that contribute to educational inequity.[12]
Gateway course	A credit-bearing course that is typically taken in the first or second year of a student's undergraduate experience to fulfill general education or major requirements. These courses are almost always considered lower-division courses at both two and four-year institutions; sometimes referred to as 100 and 200 level courses. Click here to learn more about what these courses are and why they matter.
Racially minoritized	People who are Black, Latinx, Pacific Islander, or Indigenous; who have been denied opportunities and access and suffered from systemic oppression that stems from a history of exclusionary policies in large systems, including education, housing, banking, criminal justice, and the job market. The creation of unjust practices and policies over time have made Black, Latinx, Pacific Islander, and Indigenous people the "minority", centering the blame on the systems of oppression.[13]
Poverty-impacted	Students attending higher education institutions from a household that has been impacted by poverty due to systematic oppressive practices in housing, health, education, job attainment, and many more systems where the accumulation of generational wealth has been denied.[14] [15] [16] Students from poverty impacted households may be eligible for federal financial aid programs such as the Pell Grant. However, due to current federal policy, undocumented students including students in the United States as part of the Deferred Action for Childhood Arrivals (DACA) are not eligible for any federal financial aid and may only be eligible for state and institutional financial aid based on state and local policy.

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Navigating the Guide

Laying the foundation for the remainder of the guide, including who it's for and how to use it.

Who is this resource for?

This resource was created for Course Instructors at two- and four-year institutions who are interested in adopting and implementing adaptive courseware at their institutions. The guidance and resources contained within are based on extensive research and feedback from Course Instructors, Course Designers, and Project Leads that have successfully implemented adaptive courseware at their institutions.

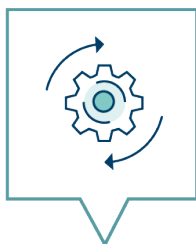| ROLE	WHAT IS THIS ROLE?	WHO MAY FILL THIS ROLE?
Course Instructor	Individual(s) that will be teaching courses and implementing any changes to course design, adaptive courseware or instructional strategies. This role can be filled by full-time faculty, adjunct faculty or graduate instructors.	Faculty, Senior Faculty, Instructors, Graduate Instructors
Course Designer	This role works alongside faculty to provide assistance in technology and instructional methods, effective use of multimedia, and adaptive courseware options in all learning environments. They may also manage LMS content, changes, and updates. This role can vary from institution to institution in duties and titles. It is important to note your institutions may not have assigned Course Designers to their department or institution. Course Instructors, with the assistance of the Center for Teaching and Learning (*if available*), may be responsible for maintaining all course design, changes, and including technology adoption. If this describes you and your role in this process, you may benefit from reviewing the tasks associated with both roles.	Instructional Designers, Instructional Technologists, Academic Technologists, Educational Technologists, Center for Teaching and Learning
Project Lead	An individual or small team charged with leading the implementation from start to finish; all other stakeholders take direction from and coordinate with the Project Lead; responsible for project management activities like leading meetings, planning, documenting, and communicating with stakeholders in every phase.	Institutional Leadership, Department Dean/Chair, Project Manager, Adaptive Courseware Manager, Program Manager, Department Coordinators

While this resource is written with Course Instructors in mind, successful adaptive courseware implementation requires a collaborative team effort. Throughout this guide, you will be provided with tasks that will require support from a Course Designer and/or a Project Lead.

There are three major phases you will work through as part of the implementation process. It is important to note that implementing adaptive courseware is not a linear process. Many phases and tasks may need to be revisited and iterated on prior to scaling the project. Engaging in continuous improvement is a critical component to a successful adoption of any new initiative.
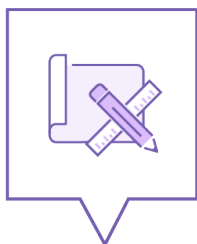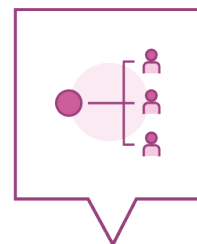
DESIGN	**PILOT**	**OPTIMIZE**
During this phase, you will make the case for adaptive courseware, establish target goals, design your course using evidence-based frameworks, and select adaptive courseware products.	During this phase, you will pilot courseware in your course and continuously improve your course in an equity- and student-centered way.	During this phase, you will work to continuously improve your course after the pilot and evaluate results to determine whether your chosen courseware should be adopted into other gateway courses at your institution.

Workstreams throughout the phases

Implementing adaptive courseware is a long-term project that has several moving parts working together to develop, pilot, and ultimately scale adaptive courseware at your institution. We have identified the major workstreams and tasks needed to be successful in each phase. The workstreams on the following page provide you with a bird's eye view of the process. Revisiting or completing more than one workstream may be necessary depending on who is on your implementation team and how your institution makes decisions. If the task does not fit your role, you may want to work with your Project Lead to determine whether to delegate the task to someone else on the implementation team or forgo the task entirely.

SUPPLEMENTAL MATERIAL
The Implementation Guide Workbook contains guiding questions organized for use as you move through the guide.

WORKSTREAM	DESCRIPTION
Goal setting, evaluation, and reporting	Good project management processes will need to drive the implementation process and each role will own a part of the goal-setting process. This workstream will provide you with actions to consider when setting goals based on your role on the implementation team.
Team building and maintenance	Successful adaptive courseware implementation requires collaboration from stakeholders across the institution including Course Instructors, senior faculty, staff, institutional leadership, and students. This workstream will provide you with ways to assemble and maintain your cross-functional team.
Course design and delivery	The course content may need to be revisited to ensure the tools selected for adaptive courseware are providing optimal pathways toward student learning outcomes. This workstream will provide you with an evidence-based framework to redesign your course as you're considering how adaptive courseware tools will increase student outcomes.
Technology considerations	Introducing adaptive courseware into a course requires an extensive evaluation of the institution and student's technological capabilities and limitations. This workstream will include items to consider from an equity-centered approach when determining how to implement the courseware tools in the targeted courses.
Tool selection and distribution	Selecting adaptive courseware will require reviewing course product availability, evaluating tools for racial and socio-economic equity, negotiating terms, and much more. This workstream will provide tools and resources to consider when selecting adaptive courseware.
Professional development	Engaging in professional development will provide each role the tools and resources they need to successfully launch adaptive courseware at their campus. This workstream will provide each role with topics and resources to engage with to ensure racial equity is embedded in the process, instructors can interpret courseware data, and much more.
Change management	Introducing and maintaining adaptive courseware in a course or academic department may require a shift in culture, such as instructor attitudes toward teaching and learning in their respective courses/departments. This workstream will identify how your role can engage in change management processes from engaging both students and instructors in shifts in pedagogy and practices.
Continuous improvement	Implementing a new initiative will require the project team to engage in actions to make the project better. This workstream will include ways to use data dashboard and student feedback to iterate on course content.

Note: Some workstreams are combined in each phase for concision and clarity

This guide was created by Intentional Futures (iF), the Association of Public and Land-grant Universities (APLU), and Achieving the Dream (ATD).

We would also like to thank our partner Higher Education Institutions who contributed ideas, case studies, resources, and student experiences to the guide and who acted as reviewers during the development. These partner institutions are:

Arizona State University

Cleveland State University

Colorado State University

Cuyahoga Community College

Georgia State University

Indian River State College

Kingsborough Community College

Lorain Community College

Medgar Evers College

Northern Arizona University

Oregon State University

Portland State University

University of Central Florida

University of Louisville

University of Memphis

University of Mississippi

University of Texas, Rio Grande Valley

University of Texas, El Paso

University of Toledo

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For questions, contact resources@everylearner.org

DESIGN PILOT OPTIMIZE

ADAPTIVE COURSEWARE IMPLEMENTATION GUIDE

Phase 1: Design

Introduction

An overview of what you will learn in the Design phase.

DESIGN	PILOT	OPTIMIZE

Introduction

In the previous section, we introduced you to the concept of adaptive courseware, provided examples of successful implementation and improved student outcomes using adaptive courseware, and demonstrated the rationale for taking an equity-centered approach through the entire implementation process.
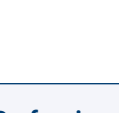
This practical resource is tailored for Course Instructors to have the guidance and tools they need to set project goals, redesign their course, select an appropriate adaptive courseware tool, pilot the course, and scale adaptive courseware to additional courses throughout your department or institution.

By the end of the Design phase, you should be able to

- Gather and analyze institutional and course-level evidence to determine the targeted course(s);
- Create a baseline project and course goals;
- Design your course using an evidence-based framework; and
- Select adaptive courseware to enhance adaptive learning for students in your course(s).

Summary of workstreams in the "Design" phase

The following workstreams are recommended items to complete during the Design phase. The workstreams in the Design phase are in a recommended order of completion. However, many of the workstreams may need to be worked through concurrently or in a different order based on your institutional needs and timeline. There are key tasks that need the support of Project Leads or Course Designers. These tasks, as well as ways to solicit needed support, will be indicated in callout boxes throughout this section.

WORKSTREAM	DESCRIPTION
Goal setting	• Use evidence to identify the target courses. • Create project goals based on the evidence gathered. • Engage institutional stakeholders to align the project goals with broader institutional goals.
Team building	• Provide a rationale for the adoption of adaptive courseware. • Identify, interview, and invite institutional stakeholders (including students) onto the implementation team. • Identify a Project Lead and an Executive Sponsor.
Course design	• Design your course using Backward Design to align assessments and course content with the course goals and objectives. • Identify the instructional purposes for using adaptive courseware products. • Engage institutional stakeholders to align the project goals with broader institutional goals.
Technology considerations	• Identify the technology gaps and develop solutions to ensure adaptive courseware can be successfully integrated into your course. • Create an action plan to address issues students may have accessing the digital tools, online tools, and accessing devices. • Create a student-friendly resource to ensure students can onboard onto the technology and address technical issues as needed.
Tool selection	• Identify and select an adaptive courseware product that aligns with your instructional goals and the needs for racially minoritized students, students from poverty impacted households, and students with disabilities. • Evaluate adaptive courseware tools for affordability for students' equitable access to the technology. • Articulate how student data is collected, stored, and shared among stakeholders and vendors. • Engage in training on interpreting. courseware data and using the tool.
Professional development	• Identify professional development opportunities to engage in new teaching and learning pedagogy, instructional frameworks, and equity-minded and anti-racist practices.
Change management	• Create a plan to engage in frequent student check-ins throughout the semester. • Select the student services programs, resources, and institutional staff that will support through your piloted course.

Goal Setting

Establish transparent and clear goals and plans that will carry your team through the project.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Goal setting

The goal-setting and casemaking processes may take place concurrently with onboarding the Project Lead and institutional leadership (explained in the following section, Building your Team). This workstream will focus on the goals and plans that should be established and transparent through the lifespan of the project. This workstream will not address setting course goals. If you would like to begin designing your course goals, you may want to skip ahead to the Course Design workstream. You can also view a list of guiding questions for this workstream here.

WORKSTREAM GOALS

- Use evidence to identify the target courses.
- Create project goals based on the evidence gathered.
- Engage institutional stakeholders to align the project goals with broader institutional goals.

Identify target courses

Identify target courses with students and course evaluations. Students will have firsthand experience in how the addition of new technology can help them engage with the materials and move them toward their educational goals. They are aware of the courses that are known to "weed out" students and how this can impact their personal and educational journey at the institution and in their major. Capturing student experiences in gateway courses can be garnered through focus groups, surveys, listening sessions with various student groups at the institution, or by directly contacting former students.

Course evaluations can also be used to help identify the target courses. The evaluations are a centralized avenue where students provide direct feedback on the course as a whole, its content, and their progress throughout. Reviewing course evaluations can provide an opportunity to identify themes and areas which could benefit from adaptive tools.

Identify target courses using historical course-level and institutional data. The list of courses you received from course evaluations should have narrowed down the list of potential targeted courses. At this point, you should be working with the Project Lead and Institutional Research (or the individual who can pull data) to see how students historically perform in the course and the subsequent courses after. Below are examples of data that can be useful to understand how students are performing in the courses based on different sets of data.

- DFW rates for gateway courses and subsequent course sequences
- DFW and pass rates of part-time vs. full-time students
- DFW and pass rates of Pell-eligible students vs. non-Pell-eligible students*

Students who may not be represented in this data are undocumented students, some juveniles or adults currently incarcerated, students who have reached their lifetime eligibility cap (6-years), and international students.[1] [2] [3] [4]

Disaggregate data

Disaggregate data by racially minoritized groups including Black, Latinx, Pacific Islander, Indigenous students, and poverty-impacted households. Understanding how racially minoritized students and poverty-impacted students have historically performed in gateway courses will provide you and the implementation team with a baseline of information as you are evaluating if the courseware was effective in increasing success rates for these groups of students. It will also provide a better understanding of the racial and socioeconomic inequity that may be occurring in the course and institution. This can be another opportunity to bring in various student groups at the institution to speak to their experiences in gateway courses and how the new intervention (adaptive technology) may or may not have supported their learning experience. It is important to approach this process with an asset-based mindset and an equity-minded approach.

Establish evaluation criteria

Pilot evaluation metrics should be identified based on the broader implementation goals, data availability from Institutional Research, and how the courseware is being integrated into the pilot. It is also critical to create metrics that are used to evaluate the pilot and are equity-centered to continue to address and remove institutional barriers that create racial equity gaps that exist for Black, Latinx, Pacific Islander, and Indigenous students.[5] This can be another opportunity to involve students, especially students from racially minoritized communities, into this process. Students can co-create these goals and provide feedback on goals that were previously set by the team.

While quantitative data can provide valuable metrics, it's also important to identify ways to gather and analyze student experiences throughout the pilot through focus groups, interviewing, or open-ended surveys distributed throughout the pilot. Student voices can bring life to the metrics gathered and explain

how the new technology is actually impacting their individual learning experiences. Racially minoritized students should also have a space to voice their experiences, especially if improving student equity is a priority for using adaptive products in the classroom.

Partner with Institutional Research early

Partner with Institutional Research early and see what data is already available to inform your pilot decisions. There may be systems already in place to track the progress and success of your initiative, or based on the new goals created, systems may need to be created to effectively track those metrics. This can also be an opportunity to request the creation of a system or to gain access to systems that can help you and the implementation team track disaggregated data more closely. This is especially true if one or more of the pilot and project goals is to improve student equity gaps. You may be at an institution that does not have a centralized Institutional Research office. You and the Project Lead can seek out some of the following individuals or offices at your institution: Information Technology (IT) office, department Deans and Chairs, Provost, Vice President of Instruction, and Learning Management System (LMS) administrators.

Engage institutional leadership

Engage institutional leadership to align project goals with broader institutional goals. Engaging institutional and departments on project goals is one way to begin the process of making the case for adaptive products in the targeted courses. Additionally, the adaptive courseware initiative is likely one of many initiatives taking place on campus. Institutional leadership can help you, other Course Instructors, and the implementation team to create goals and milestones that align with broader student success goals. This is also an opportunity to align the project's student equity goals with the department and institutional student equity goals. Once institutional leadership is bought in, they can use their voices as campus leaders to advocate on the project's behalf for additional resources and campus support.

REFLECTION QUESTION

Based on disaggregated quantitative course-level and institutional-level data and the experiences of instructors and students, which course(s) can most benefit from adopting adaptive courseware?

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Team Building

Guidance on how to recruit the right people at your institution to ensure a successful implementation process.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Team building

The process of successfully implementing adaptive courseware requires individuals across the institution to work collaboratively from the beginning. The implementation team will work together to define project goals, make the case for adaptive courseware with the institutional stakeholders, and much more. Further, choosing the right team members that are open to new teaching and learning approaches, have an equity and student-centered mindset, and can work through the inevitable challenges is essential to the success of the project.

This workstream will provide you with guidance and advice to identify who should be included in the implementation team and ways to center students and their experiences in the process. You can also view a list of guiding questions for this workstream here.

WORKSTREAM GOALS

- Provide a rationale for the adoption of adaptive courseware.
- Identify, interview, and invite institutional stakeholders (including students) onto the implementation team.
- Identify a Project Lead and an Executive Sponsor.

Review the research

Explore research or case studies that document the impacts of teaching and learning innovations, like adaptive courseware, to help build your understanding of how these initiatives might have an impact on your course and institution. Many adaptive courseware products also have extensive data sets and case studies that can be used to make your case to instructional staff, departments, and institutional leadership. When you're reviewing the research, ensure you understand how courseware products are making an impact on racially minoritized students and students from poverty impacted households. Below are resources you may want to consider:

- 📖 [Collection of evidence-based research from Courseware in Context (CWIC)](#)

- 📖 [Institutional Case Studies curated by Every Learner Everywhere](#)

- 📖 [7 Things You Should Know About Adaptive Learning, EDUCAUSE](#)

- 📖 [View additional readings and resources to review](#)

Why courseware?

Articulate why you and/or your institution is considering using adaptive courseware. This may require discussions with leadership from across the institution to help identify challenges or needs that can be addressed with adaptive courseware. Keep in mind that your initiative is more likely to be supported by stakeholders from across the institution if you can demonstrate that it aligns with broader institutional goals.

Identify an Executive Sponsor early

It is essential to secure the support of top-level leadership during the initial phase of your initiative. The Executive Sponsor should have the capability and willingness to:

- Secure the appropriate human resources for the implementation.
- Advocate for and allocate financial resources.
- Meet with groups on campus to communicate expectations around participation, timelines, and resource requirements.

See the table at the end of this workstream for a description of this role and who may fill it.

Build your network

Network with other institutions that have used adaptive products. Identifying campuses that have used adaptive tools in their course can be a useful exercise to learn about their successes and challenges. This is also an opportunity to learn which tools they used, how they worked within their institutional landscape, and how they navigated challenges that arose throughout the project. One way to network with other institutions is to contact the vendors for a list and contact information of institutions and instructors using their products. You and your team can also explore the Every Learner Everywhere case studies for institutions who are seeing results from adopting adaptive tools.

Designate a Project Lead

The Project Lead will be responsible for managing the lifespan of the implementation process. Designating this individual early in the process is critical as they will support the logistics of the project that may not be manageable for a Course Instructor solely to handle. The Project Lead will likely establish project goals, set key milestones, manage the budget, organize meetings, regularly communicate with stakeholders, and much more.

Interview institutional stakeholders

Interview institutional stakeholders to understand their needs and capacity. Implementing the new technology will require input from several groups across the institution that may include student services, institutional leadership, the bookstore and library, information technology (IT), Center for Teaching and Learning, etc. Work with the Project Lead or institutional leadership to ensure there are incentives for instructors, staff, and students who are participating in the pilot.

Center student voices

Invite students into the decision-making process. Inviting students into this process from the start will be beneficial throughout the project. Centering student voice in the process will require intentional planning to ensure students have been consistently consulted throughout the project's life span. Teams must recognize students as valuable members of the team and ensure that their suggestions and feedback are taken seriously throughout the process. Students can contribute to this process in one or more of the following ways:

- Selecting targeted course(s)
- Setting goals for the project
- Co-creating and reviewing the course goals, instructional content, and activities
- Organizing and leading student focus groups
- Reviewing aggregated course-level data

It is also important to note that, while student voice is critical to this process, they must be compensated and credited for their contributions to the team. Project Leads and the executive sponsor will need to establish a budget and clearly outline how students will be paid for their time. Students should be included in the process of identifying incentives, as the incentives should reflect the needs and goals of the student providing support.

PROJECT LEAD TIP

Create incentives for project participation.
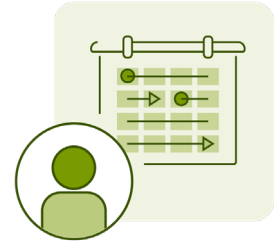
The **Project Lead** will need to work with the Executive Sponsor, academic department(s), and the institutional leadership to identify and communicate the incentives for the Course Instructors, staff, and students that are participating in the project. Course Instructors are integral to piloting the courseware in their course(s) and will be investing additional time and energy beyond their normal load. This expectation may discourage participation, especially if incentives are not clearly communicated to the participating instructor(s). The incentives can vary based on institutional resources and multiple incentives should be offered when possible. Possible incentives include:

- Financial incentives such as stipends. Course Lead incentives ranged from $500 to $7,500 at partner institutions

- Time off or reduced instructional load to devote time to the new course development or instruction

- Financial support for professional development through conference attendance

- Support for research on pedagogy or outcomes using adaptive courseware

- Publication opportunities

- Recognition for participation through internal or external awards

Students participating in the project must have clear incentive options for their contributions to the project. Offering financial incentives for students may require consulting with the Financial Aid Director to ensure institutional and federal guidelines are met. Some examples of incentives to offer students may be:

- Work-study

- Scholarships, grants, or stipends

- Student publication opportunities

- Financial support for professional or leadership development opportunities

- Public recognition for participation through internal or external awards

- Offering college credits

Who should be on the implementation team?

Based on feedback from the partner and additional institutions engaging in this work, here is a more detailed list of some of the roles and positions you can consider for your institution's implementation team. This list is flexible and roles may vary based on institution type and availability of the individuals in these roles.

Role	How can the role fit within the implementation process?	Who may fill this role?
Executive Sponsor	The individual or group at the highest level that will advocate for the initiative throughout the process. Typically this person or group will designate the Project Lead.	Provost, Vice-Provost, Dean, Academic Chair, VP of Student Success, VP of Instruction
Course Lead	The individual or small team that drives course-level decision making related to the courseware implementation.	Faculty Leads, Course Coordinators
Academic Management	The individual or groups with decision-making power or authority with respect to resource allocation and course curriculum.	Deans, Associate Deans, Faculty Leads, Department Chairs
Discipline Instructional Staff	The Course Instructors responsible for teaching and creating course content for their subject area.	Discipline Course instructors, senior faculty, Course Leads, Course/Department Coordinators, Graduate Instructors
Teaching & Learning Support	The individuals with expertise in instructional design and/or teaching and learning who provide a range of support services related to courseware adoption; may be employed by the institution or the courseware vendor.	Instructional Designers, Center for Teaching and Learning
Diversity, Equity, and Inclusion	The department, committee, or individual responsible for evaluating institutional decisions and processes to ensure they are equity-centered and align with the long-term institutional student equity goals.	Dean of Student Equity, Coordinator of Student Equity, Chief Diversity Officer, Director of Diversity and Inclusion
Vendor	The company that delivers adaptive courseware solutions; may also offer services like course development or faculty training.	Sales, Account Manager, Project Manager (all vendor-employed)
Institutional Research (IR)	The institutional office or designated individual(s) responsible for pulling and analyzing implementation data from the courseware products and institutional databases.	Institutional Research (IR) team, Institutional Effectiveness, faculty of graduate students

Continued on next page...

Role	How can the role fit within the implementation process?	Who may fill this role?
Technology Support	A team that helps evaluate and develop the infrastructure needed to use adaptive courseware; helps students with access/installation and troubleshooting.	Information Technology (IT), Chief Information Officer, Project Managers, Instructional Technologists, Academic Technologists
Disability Resources Office	The office on campus provides students with disabilities with accommodations, assistive technology, and additional support. This office can provide insight and expertise on disability and access considerations through the redesign and adaptive courseware tool selection process.	Accommodation Counselors/Coordinators, Learning Specialists
Students	An individual or group of students that can provide student-focused perspectives on their experiences in the course (or similar courses) and authentic ways to engage students to garner feedback.	Peer mentors, peer tutors, supplemental instructors, past students

REFLECTION QUESTION

How can the implementation team and I authentically engage students who are Black, Latinx, Indigenous and Asian-American through the life-span of this project?

Course Design

An overview of equity- and student-centered frameworks that will help you redesign your course.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Course design

The process of designing course content will likely take the greatest time for you and other course instructors. Revisiting the course goals and how subsequent course sequences align to those goals will be necessary to ensure that the courseware implementation properly engages and guides students.

As previously mentioned, this guide recommends using Understanding by Design (referred to as **Backward Design** hereafter) to design adaptive courseware into your course. This section is meant to provide you with an overview of the framework, including a three-stage approach to designing content. Click here to download the accompanying Backward Design Workbook, authored by Susan Adams, Achieving the Dream; Jeffrey Rodgers, Cuyahoga Community College; and Sarah Goode, Cuyahoga Community College.

If you and your implementation team have not explored adaptive courseware tools, you may want to skip ahead to the Tool Selection workstream. In most cases, instructors are exploring tools and identifying ways the tools will support their instructional strategies and content in tandem with the course design process.

WORKSTREAM GOALS

- Design your course using Backward Design to align assessments and course content with the course goals and objectives.

- Identify the instructional purposes for using adaptive courseware products.

- Engage institutional stakeholders to align the project goals with broader institutional goals.

STEP 1
Identify desired results

STEP 2
Determine acceptable evidence

STEP 3
Plan learning experiences
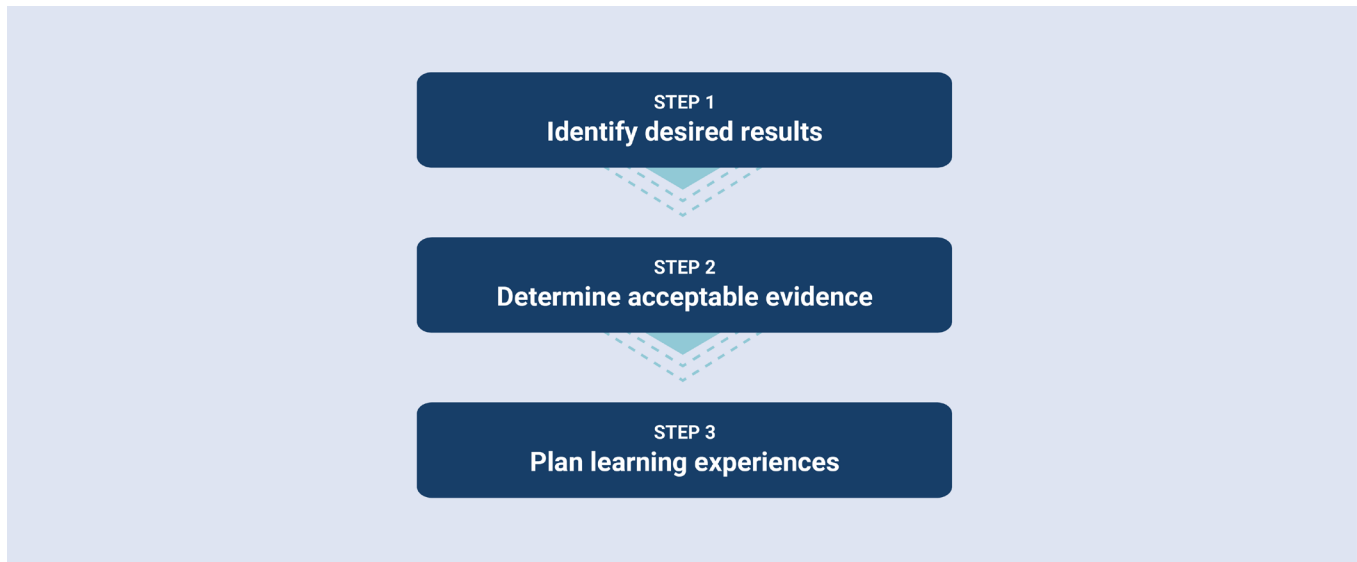
Backward Design is a three step process.

Define courseware purpose

Determine what instructional purpose(s) you envision for the courseware. Many courseware tools already have learning objectives, practice activities, and assessments built-in. When using these tools, it is more likely you will be curating results, evidence, and experiences rather than developing them. It is important to note that while adaptive courseware can provide you and the students a number of great features and data that will help students personalize their learning experience, it is still critical that course materials are clearly organized and aligned to the course goals and lesson objectives.

As you determine what instructional purpose(s) adaptive tools can have on your course, you will want to revisit your course goals and objectives, assessments, and the instructional content alignment with the goals and assessments. One way to design your course with the goals, assessments, and content in mind is by using Backward Design.

Use Backward Design

Design your course using Backward Design. The Backward Design process indicates that you start with the end in mind, making it possible to find an effective blend of content and performance. By placing the learning outcomes at the forefront of the planning process, instructors can create an assessment strategy that fosters learning and provides ample opportunity for accurate measurement of student learning. This enables instructors to make effective instructional choices for teaching the content that sets the stage for building an interactive learning community.

As the course elements reveal themselves, the focus becomes how to build authentic assessments to guide students through a learning journey that is relevant and meaningful, and provides ample opportunity for collaboration and exploration. By articulating more specifically the established goals of the course, instructors can more accurately determine where they want students to end up. This creates

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PHASE 1: DESIGN

Course Design | 30

an opportunity to more easily see when a student comment or created content is an entry point to achieving a learning goal.

Instructors will find that thoughtful, well-crafted, and culturally responsive activities that are clearly aligned with outcomes will foster students to perform on their own and fluidly draw from their own repertoire. There are three steps in the Backward Design model, and each is described below with an accompanying set of guiding questions to support your thinking:

- **Step 1: Identify desired results.** What should students know and be able to do at the end of the course? These are your learning outcomes.
- **Step 2: Determine acceptable evidence** that students have achieved these learning outcomes. These are your formative and summative assessments.
- **Step 3: Plan learning experiences, instruction, and resources** that will help students be able to provide evidence that they have met the learning outcomes.

Identify desired results. This step invites the establishment of course goals that constitute the enduring understandings and learning goals of the lesson, unit, or course. The enduring questions of this step include:

- How will I know if students have achieved the desired results for the entire lesson/course?
- How will I know if students have achieved the desired results within the adaptive courseware?
- What will I accept as evidence of understanding of and proficiency in the adaptive experience?

Taking this a step further, think through the transfer of knowledge:

- How can students independently use their learning to achieve the course goals?
- How will students transfer the knowledge gained from the lesson, unit, or course and apply it outside of the context of the course?
- What are the big ideas and specific understandings students will have when they complete the lesson, unit, or course?
- What are the essential questions of the course?
- What skills will learners master?
- What are big ideas and important understandings learners should retain?

Determine acceptable evidence. This step presents the authentic performance tasks that students will complete demonstrating desired understandings or that they have achieved their goals. Performance tasks are typically large assessments that coalesce various concepts and understandings, often in the form of projects or papers. Crafting an "authentic" assignment means bringing the current context of the students, society, and the world into the assignment itself — for example, creating a brochure for a local non-profit that amplifies their mission to provide a needed service in that community. By bringing this context into the assignment, students learn by creating something that impacts their world and will last beyond the course itself.

Authentic assessments can also be culturally affirming. This approach requires that you get to know your students. Where possible, work with your department to determine what the demographics of the class are. Conduct a survey or activity that gets at what your students' personal goals are — and what their aspirations and reasons for taking the course are. Here is where you can invite your students' culturally-bound knowledge into the course, leading to assignment designs that incorporate their cultural context along with their existing skills and knowledge. For example, in a STEM course, consider research elements that are culturally relevant and what their impact might be on different communities.

Design learning experiences. This stage encompasses the individual learning activities and instructional strategies that will be employed. This includes lectures, discussions, problem-solving sessions, etc. This step provides you with a summary of key learning events and instructions. Consider these questions as you craft your learning plan:

- What knowledge (concepts, facts, principles) and skills (processes, procedures, strategies) do students need?
- What should learners hear, read, view, explore, or otherwise encounter?
- What activities (including adaptive) will provide knowledge and skills?
- What activities will introduce content, which ones will reinforce content, which ones will assess learning, and which will give feedback?
- What activities will be done before class, during class, and after class time?
- How might you design the relationship of course activities with the adaptive experience?

Backward Design supports equity

Keep in mind how Backward Design supports equity. In *Understanding by Design*, Wiggins and McTighe argue that backward design is focused primarily on student learning and understanding. When teachers are designing lessons, units, or courses, they often focus on the activities and instruction rather than the outputs of the instruction. Therefore, it can be stated that teachers often focus more on teaching rather than learning. This perspective can lead to the misconception that learning is the activity when, in fact, learning is derived from a careful consideration of the meaning of the activity.

The incorporation of backward design also lends itself to transparent and explicit instruction. If the teacher has explicitly defined the learning goals of the course, then they have a better idea of what they want the students to get out of learning activities. Furthermore, if done thoroughly, it eliminates the possibility of doing certain activities and tasks for the sake of doing them. Every task and piece of instruction has a purpose that fits in with the overarching goals of the course. Furthermore, these advantages clarify why backward design supports student success.[1]

REFLECTION QUESTION

———————

Based on the goals and learning objectives in the targeted course(s), am I using courseware in ways that match its instructional purpose? If so, how?

References

1   "Understanding by Design." Vanderbilt University. https://cft.vanderbilt.edu/guides-sub-pages/understanding-by-design/.

Technology Considerations

Important considerations related to technology as you move through the Design phase.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Technology considerations

The incorporation of adaptive courseware into your course will require an extensive look at several components of the technology landscape for your students, both within the communities the students are coming from and within the institution. This process requires the input and considerations of several stakeholders including students, the Information Technology department (IT), Course Designers, and institutional leadership. This section will help you identify and create solutions when accounting for the technology your course will need and the campus personnel who may support you in that endeavor. This process will also require you and your team to have an equity-minded approach when identifying and developing solutions. Click here for a list of guiding questions to consider as you work through this workstream.

WORKSTREAM GOALS

- Identify the technology gaps and develop solutions to ensure adaptive courseware can be successfully integrated into your course.

- Create an action plan to address issues students may have accessing the adaptive tools, online tools, and accessing devices.

- Create a student-friendly resource to ensure students can onboard onto the technology and address technical issues as needed.

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PHASE 1: DESIGN
Technology Considerations | 34

Evaluate student barriers

Evaluate and develop solutions for students who may have barriers accessing the new technology. While it is easy to assume students will be able to quickly access and adapt to the new technology in the course, it is important to check our unconscious biases and recognize that there are students who have difficulty accessing the technology. An equity-minded approach is critical insurance. You're surveying how students — especially Black, Latinx, Pacific Islander, and Indigenous students, and those that are impacted by poverty — are accessing your course materials. As you're evaluating the technical needs of your students, strive to seek answers to the following questions:

- Can students access the course materials using any electronic device (laptop, tablet, cell phone)?

- Can the course materials be downloaded for offline usage? Have I included instructions for students to know this capability exists?

- If students do not have electronic devices, are there programs or services on campus that I can refer them to?

- If students do not have regular, uninterrupted access to the internet at home, how can my assignment expectations be revised to accommodate these students?

Fulfilling each student's needs is no easy feat. As a result, to ensure student success, be flexible so you can adapt. Here are some solutions to explore for students with little to no technology or internet access:[1]

- Allow for multiple upload/quiz submission attempts to accommodate students with poor wifi connectivity.

- Eliminate penalties for late submissions.

- Allow students to work ahead.

- Create multiple modalities for students to access and turn in content.

- Create alternative versions of formative and summative assessments.[2]

PROJECT LEAD TIP

Know your institution's technology capabilities and limitations.
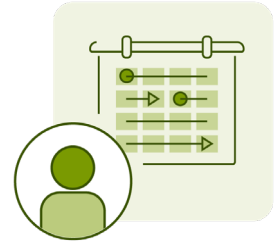
- Work with the Information Technology (IT) department to understand the institutional capacity for technical support and internet infrastructure. Prior to selecting an adaptive courseware tool, there may be technological constraints that need to be addressed. As a result, it is important to understand what the limitations of technology and infrastructure at the institution are, and the institution's capacity to support or build solutions. Partnering with the Chief technology officer or another team in the information technology department can help you navigate this process. The Project Lead may want to address the following questions members in IT and institutional leadership:

- Who in IT or institutional leadership has to be involved in the tool selection process?

- What kind of training and technical support can they provide to instructors, course designers, and/or students?

- Does IT have the capacity to integrate adaptive courseware into their current infrastructure?

- What data security protocols must be met to access student-level data? Who has access to the data? How can students request access to their data?

- Who will facilitate the ongoing communication and technical needs between the vendor and IT?

- Will the products work with your existing infrastructure and institution policies (e.g., accessibility, data security)?

REFLECTION QUESTION

How can I ensure that students impacted by poverty, racially minoritized students, and students with disabilities have equitable pathways to access the course materials and complete the course requirements without any penalties?

References

1   "7 Approaches to Alternative Assessments." ASCD. 14 Nov. 2019, http://www.ascd.org/ascd-express/vol15/num05/7-approaches-to-alternative-assessments.aspx.

2   "Alternative Assessment Strategies." https://cei.umn.edu/support-services/tutorials/integrated-aligned-course-design-course-design-resources/alternative.

Tool Selection

Guidance for selecting an adaptive courseware tool that fits your needs.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Tool selection

After you have redesigned your course, created clear course goals, identified your students' needs, and understood the technology capabilities and limitations at your institution, you're now positioned to select an adaptive courseware tool that fits the needs of your students (especially for racially minoritized students) and course goals. For many institutions, selecting the adaptive courseware tool will take place as you're redesigning your course as well. Many adaptive tools have learning objectives, practice activities, and assessments built into their products. When using these tools, it is more likely you will be curating results, evidence, and experiences rather than developing them. It is important to note that while adaptive courseware can provide you and the students a number of useful features and data that will help students personalize their learning experience, it is still critical that course materials are clearly organized and aligned to the course goals and lesson objectives. Additionally, instructors should be mindful and select products where they can clearly articulate what data is being collected on their students and how that data is being used to curate a personalized learning experience for them.

This section will help you to explore adaptive courseware tools, negotiate terms of the tool with vendors, and provide you with guiding questions as you are evaluating the tool for equity for racially minoritized students, students with disabilities, and students from poverty impacted households.

- Identify and select an adaptive courseware product that aligns with your instructional goals and the needs for racially minoritized students, students from poverty impacted households, and students with disabilities.

- Evaluate adaptive courseware tools for affordability for students' equitable access to the technology.

- Articulate how student data is collected, stored, and shared among stakeholders and vendors.

- Engage in training on interpreting courseware data and using the tool.

Things to consider

There are many different adaptive courseware products to choose from. Some instructors elect to create their own custom courseware with the help of instructional designers and a vendor, while some choose an out-of-the-box product that has instructional content, quizzes, and ways for students to engage with each other ready to go. In other cases, instructors will choose a combination of the two previously mentioned to create a learning environment that is curated to the needs of the students and content. Narrowing down products to use can feel overwhelming, but there are resources for you to take advantage of to make the choices easier to manage:

- Using tools such as the Courseware in Context (CWiC) Framework or the EdSurge Product Index will provide you with an evidence-based framework and a way to explore tools in one place.

- Once you have selected the products you are interested in adopting into your course, send out requests for information (RFIs) to vendors to learn more product specifications and functionalities.

- Ask vendors for product demonstrations and trial accounts.

- Determine the functionality you want from the courseware.

- Consider the following questions, and download the Workbook for a more extensive list of questions to consider.

  - Are you able to customize content and assessments?

  - What value to students does the courseware provide to the course?

  - Is the courseware tied to a particular textbook title, or can you use it with the textbook of your choice?

  - If you are replacing the textbook with Open Educational Resources (OER), does the courseware allow for such substitutions?

  - Does the courseware integrate with an existing LMS system?

- Is the data dashboard easy to navigate and use for both instructors and students?
- What supplementary resources are provided for students? Can I customize the content?
- What data is being collected about students by the courseware and who owns that data?

Use an equity-centered approach

Select and evaluate courseware products for your course with an equity-centered approach. Students are the end-user of these products. The tools selected should align to the overall course goals and with an equity-centered mindset. While there are tons of functionalities the courseware can offer, it's important to consider and select courseware that does not leave behind any students, including students with disabilities, racially minoritized students, and students from poverty impacted households. The below guiding questions are a preview of questions you should consider when selecting adaptive courseware with an equity-centered approach. An extensive list of guiding questions can also be found in the Workbook.

Access and accessibility

- Does the technology enable offline downloading for students who do not have reliable access to high-speed broadband internet?
- Can the technology be accessed on all devices, including a mobile device?
- Can the product easily integrate with assistive technology for students with disabilities?

Cost

- Will the cost of the courseware create an undue financial burden on students from poverty-impacted households?

Representation

- Are racially minoritized groups positively represented and through a strength-based perspective?

Judge how student data is collected and analyzed

Adaptive courseware products have the ability to create personalized learning pathways for students because the technology analyzes the students' data and provides tailored instruction and activities based on their performance on assessments, learning activities, or self-remediation. The collection of large sets of student-level data and analyzing it for instructional and institutional needs is called learning analytics. ELE Network partners Tyton Partners created an extensive Learning Analytics Strategy Toolkit that provides guiding principles behind learning analytics, effective implementation, and how to use data to address equity gaps for racially minoritized students.

As an instructor, you should be confident in articulating what data is being collected on the students and how that data affects the student learning experience. You should also be able to identify how and when students have access to their own data, how long the data is stored, and which departments and individuals have access to that data. If IT and other institutional stakeholders have not already been informed about this data collection process, the Project Lead needs to communicate that to them prior to selecting a final tool.

Get vendor training

Request training on the products from the vendor. You and the implementation team may have varying levels of comfort when it comes to new technology and approaches. Use this training to ensure you and your team understand how the technology works, its full capabilities for students and instructors alike, and how to analyze and interpret the data that is provided by the product. This process can also support instructors and course designers alike, to request new integrations or development of a feature that may be needed for your course or department. It's important to note that customization and development may vary based on the complexity of the request, the company, cost to build the feature, and ability for the feature to be scaled.

COURSE DESIGNER TIP

## Decide whether to build or purchase off-the-shelf.

As the Course Instructor and the implementation team begin analyzing different options for your adaptive course, the **Course Designer** should be aware of issues and challenges that arise when creating a course from scratch.

Many of our partner institutions have found that vendors already offer an adaptive courseware component or a textbook replacement product for a given course, and using these products is often easier than building a customized course. The institutions have also found that these solutions often meet most of their needs, especially if Course Instructors are not familiar with adaptive courseware or the institutions do not have instructional design resources available.

On the other hand, several institutions have found that despite the significant effort required to build a course from scratch, this customization leads to more engaged stakeholders, particularly Course Instructors.

If you decide to custom-build a course, your institution should be prepared for what the process entails and have plans in place if the course is not ready by the anticipated start date. It can take several semesters to build and test a new adaptive course. It will involve a partnership among instructional designers, subject-matter experts, vendors, and IT/technical professionals. In comparison to printed curricula or static courses, adaptive courses require a much larger body of content and assessments so that each student can have a customized, adapted pathway through the material.

Institutions may also run into intellectual property issues as they develop and curate content.
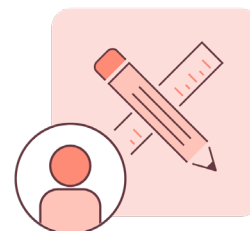
PROJECT LEAD TIP

Assess your contract agreement.
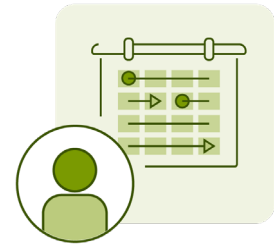
Depending on your institution's process for managing contract agreements, there may be differences in who needs to be involved. Regardless of who is at the table, the following guiding questions should be part of any contract agreement with vendors:

How much will the product cost the institution and students?

At a very basic level, you'll want to agree upon how much money will be paid to the vendor and what products and services the vendor will provide in return. For example, does the vendor provide faculty and student training as part of the agreement? Is tech support part of the agreement? If the courseware is customizable, does the vendor provide assistance to instructors and/or course designers to make the desired changes? Regarding pricing, does the vendor require a baseline of student users to satisfy the terms of the agreement? If so, for how many academic terms will you need to meet this baseline? How will the vendor be compensated? Is the institution or academic department responsible for paying the vendor or are students required to purchase access codes for the courseware? If the institution or academic department is covering the cost of the courseware, are they instituting a course fee to recover that money from students? If students are paying for the courseware themselves, what are their purchase options? Are students required to purchase course materials from the university bookstore? If so, what is the mark-up they'll pay? Does the vendor have a direct pay option so students can purchase the access code directly from the vendor's website?

What level of technology support is expected of the institution?

If the vendor does not provide technical support, or if the technical support is limited, you will need to bring representatives from your instructional technology or information technology department to the negotiating table. It will be important to know the scope of the technical support provided and what specifications are required by your institution if you want the courseware integrated into the learning management system. Also, ask about preferred browsers for maximum performance from the courseware, computer specifications if the courseware needs to be downloaded to run optimally, and which devices provide the best user experience.

How do Course Instructors and institutional stakeholders get the data and who owns that data?

The big promise of adaptive courseware is data, but such data are not always easy to obtain by instructors. Negotiations with the vendor need to address which data you want from the courseware, how you can obtain that data, and who owns the data. Data on student performance in a particular class (both individual performance and class aggregate performance) should be accessible on the instructor dashboard. Likewise, item analysis data for assessment questions should also be easily accessible by instructors. Data sets that you may need to request from the vendor include aggregated data for multi-section courses and student use data. These data are useful when making the decision to scale courseware use and when engaged in continuous improvement efforts.

Negotiate with vendors

Negotiate agreements with vendors and pilot participants. Agreements with vendors will be formal subscription and service agreements and should include a term for the contract, details of the product offering and update process, and specific services offered to support implementation, training, and ongoing use. Your technology support team should confirm that the courseware meets all institutional technology requirements before finalizing a contract. Agreements with pilot participants may be a non-binding Memo of Understanding (MOU) that stipulates the expected time and effort contribution of the participant, any incentives for participation, and a term. Check out Colorado State University's (CSU) MOU for an example. Please note: This MOU assumes grant funding for the adaptive courseware initiative. For an extensive resource on negotiating contract terms, see the Courseware License Agreement Checklist.

REFLECTION QUESTION

How does the selected tool meet the needs of the students as well as the course goals?

Professional Development

Guidance on how to focus your professional development efforts and funding during the Design phase.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Professional development

Adopting a new instructional approach will require a shift away from traditional teaching pedagogy. You may need to engage in professional development (PD) to learn new pedagogical and course design frameworks and participate in racial-equity, anti-racist training. Designing and implementing a course with an equity-minded approach may also require examining your gaps in knowledge and understanding of various groups of students, including students with disabilities and students from poverty-impacted households, and many more. Professional development will also need to include how to effectively incorporate the adaptive courseware into the course and how to interpret the courseware data dashboards.

Course Instructors should look first to their current institution's offerings, as many colleges and universities invest in extensive professional development programs for the personnel. In addition to what institutions may offer you, there are thousands of PD offerings available in multiple formats (e.g., conferences, webinars, workbooks, etc.). This workstream will help you to narrow down your options and provide you with resources you can currently use in the implementation process.

WORKSTREAM GOALS

- Identify professional development opportunities and resources to engage in new teaching and learning pedagogy, instructional frameworks, using adaptive courseware, and equity-minded and anti-racist practices.

Racial equity

Engage in continuous racial equity and anti-racist professional development. All levels of instructional staff need to engage in training that allows you to investigate personal and cultural biases to create an equity-centered course and ongoing principles that are applied to your course and the institution. Training can include topics such as implicit bias, equity-centered design, culturally inclusive teaching, accessibility and adaptive courseware, universal design for learning (UDL), anti-racism in education, and many more. While not meant to be an exhaustive list, here are a few resources and tools you can explore to deepen your understanding of these concepts further:

📖 USC Center Urban Education: Racial Equity Tools

📖 Every Learner Everywhere: Framework of Accessibility Approaches

📖 NYU Toolkit on Digital Inclusion

📖 Find more resources and toolkits in the Implementation Guide Workbook

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COURSE DESIGNER TIP

Support Course Instructors to embrace new instructional frameworks and strategies.
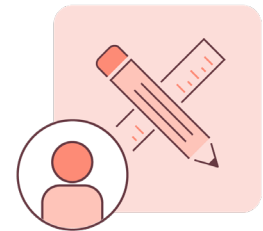
The method recommended in this guide for redesigning your course is **Backward Design**. This method was explained in more detail in the "Design Course Content" section above. However, there are also several other methods and strategies you can employ during this process. Work with your Project Lead and institutional leader to identify ways to attend formal training or workshops on the methods. Below are a few examples of frameworks and strategies to explore with Course Instructors.

- Backward Design (also known as Understanding by Design)

- Inclusive Design, Every Learner Everywhere

- Universal Design for Learning (UDL), CAST

- Equity-Centered Design, Stanford d School

- Adaptive Learning: Research-Based Principles for Developing Effective Courses, WCET

Work with vendors

Work with vendors to learn the courseware's capabilities and analyze courseware data. Adaptive courseware products have a plethora of features that are available to Course Instructors and students to personalize the learning experience. Working directly with the vendors can open you up to the multitude of possibilities the courseware can do for you and your students. Many vendors will happily engage with Course Instructors to train them on the capabilities of their courseware and how it will help you provide an engaging and personalized learning experience for students.

REFLECTION QUESTION

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What professional development opportunities can I participate in that will increase my knowledge on creating a learning environment that increases racial equity for people who are Black, Latinx, Indigenous, Pacific-Islander and Asian-American?

Change Management

Gain important project management insights about how to support your institution through the implementation process.

DESIGN	**PILOT**	**OPTIMIZE**

WORKSTREAM

Change management

Introducing new technology for instructors will take time for you and the implementation team to become accustomed to. It may also take the students in the course some time to adjust to the change of the traditional approach to the course. The goals in this section are targeted toward ensuring that students are oriented toward adaptive courseware and providing the instructional and institutional support necessary to be successful.

WORKSTREAM GOALS

- Create a plan to engage in frequent student check-ins throughout the semester.
- Select the student services necessary to support students through the pilot phase.

Check in with students

Having access to student-level data in a quick fashion is adventurous for you as the Course Instructor, but the data that you're provided from the product's dashboard only provides you with a snapshot of the students' experience. Intentionally creating space to check in with students one-on-one (or small groups) to provide direct feedback or inquire on their performance can go a long way. These interactions can also provide you with insight into the course and courseware that you were previously unaware of. For large courses, exploring the use of existing programs at the institution such as paid peer mentors, supplemental instruction instructors or academic tutors may also be utilized. Work with your Project Lead, institutional leadership or financial aid to identify incentives for students who may provide direct support in your courses.

PROJECT LEAD TIP

Create a network of support for instructors and implementation team members.

Implementing a new initiative can be both exciting and challenging for instructors in their classroom. Project Leads can support them in creating opportunities for them to share their experiences with other instructors. Through the design process, the instructors are taking on a great deal on their workload. Regular check-ins should be scheduled throughout the design process to identify any challenges the instructor may be experiencing and relay them to the appropriate stakeholder.

Instructors will need to have a support network to help guide them through this process. Project Leads may want to consider creating a learning community of faculty, the implementation team members, and other institutional stakeholders. Some additional opportunities to collaborate and share experiences can be through lunch and learn sessions, department meetings, or professional development workshops hosted by the Center for Teaching and Learning (CTL).
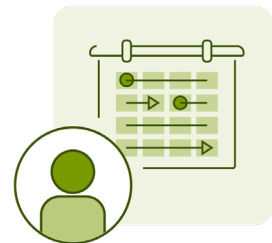
Provide students with multiple avenues of support

As a Course Instructor, you may have multiple responsibilities and expectations on you throughout this project. Identifying student services that can support students through technical problems, tutoring, or general support can help alleviate some of the expectations on you. It's critical to ensure students are aware of the support available to them. Listing these supports in the syllabus, Learning Management System (LMS), or in the customized adaptive courseware products will help students find the support more often. Below are some questions you may want to address while you're identifying additional supports on campus:

- What student services programs support racially minoritized students? (i.e. PUENTE, TRiO, Umoja, etc.)
- When students encounter technical problems is there support on campus they can be directed to? Can the vendor provide direct support to students?
- How do students access tutoring? Are there virtual options available?
- Are students assigned advisors? Have I communicated the course change with the advising center/counselors and invited them to the implementation team?
- Is the Disability Services office aware of the newly implemented technology? How can they provide me and students with disabilities with ongoing support?
- What support do students already utilize on campus?

REFLECTION QUESTION

Which student services and/or academic support resources are available for students who may need academic or social support while they are enrolled in my course?

Case Studies

Examples from institutions who exemplify the process for the Design phase.

Oregon State University (OSU): A Team-Based Approach to Redesigning Developmental Math Courses

OSU was facing a challenge with very high drop/fail/withdraw (DFW) rates in their development math courses. As part of the solution, in 2017 they worked as a team to incorporate adaptive learning platforms into their course redesign. Over multiple semesters, they saw great improvements for their DFW rates.

📄 **Click here to read more about OSU's design process.**

Arizona State University (ASU): How ASU removed barriers and increased undergraduate success

Mathematics faculty redesigned College Algebra by eliminating the prerequisite developmental math course, implementing adaptive courseware to support student learning, and adding a flexible "stretch" semester to give students more time to master learning objectives.

📄 **Click here to read more about ASU's design process.**

Cuyahoga Community College (Tri-C): Increasing Course Success through Student Engagement and Active Learning

In an effort to increase student success rates in her macroeconomics class, Dr. Michele Hampton redesigned the Economics course to meet this goal through three strategies: structure the class as a learning experience rather than as an exercise in memorization, provide students with abundant opportunities to apply course concepts to practical problems and issues, and create a sense of community within the learning environment.

📄 **Click here to read more about Tri-C's design process.**

Find more resources at everylearnereverywhere.org

For questions, contact resources@everylearner.org

DESIGN	PILOT	OPTIMIZE

ADAPTIVE COURSEWARE IMPLEMENTATION GUIDE

Phase 2: Pilot

Introduction

An overview of what you will learn in the Pilot phase.

DESIGN	PILOT	OPTIMIZE

Introduction

Now that you have redesigned your course and established project goals, you are now prepared to begin piloting your course and reporting progress updates to your stakeholders. Much like a clinical trial, a course revision pilot should seek to do no harm, contribute to the general knowledge around teaching and learning, and, if it is successful, provide instructors with effective teaching solutions and students with effective learning opportunities. Recording the process, progress, outcomes data, and feedback are essential for determining if your pilot achieves the goals you set in terms of effectiveness and equity. In addition, it is critical to engage in continuous improvement based on feedback and data from your students and other members of the implementation team.

By the end of the Pilot phase, you should be able to

- Run a pilot of a revised course that includes implementing adaptive courseware.
- Collect and analyze course-level data to determine pilot success.
- Collect and analyze student and instructor feedback to determine improvement areas before moving to scale.

Summary of workstreams in the "Pilot" phase

Instructors, Course Designers, and Project Leads with experience running and managing course pilots identify the workstreams and tasks detailed in this section as key to a pilot's success. Based on your institutional needs and capacity, the workstreams may need to be completed concurrently and/or delegated to another member on the implementation team.

WORKSTREAM	DESCRIPTION
Course delivery	• Articulate to students the role of adaptive courseware in your course. • Articulate the reasons why adaptive courseware is being implemented to new Course Instructors and implementation team members.
Technology considerations	• Carry out a simulation test, prior to the start of the course. • Communicate to students how to seek technical help. • Identify solutions to technical issues that arise throughout the pilot.
Tool distribution	• Track student purchase of digital tools and pricing of the digital tool. • Offer scholarship access to digital tools for students who have not logged in after the first week of classes.
Professional development	• Create a community of practice among instructors involved in the pilot. • Create opportunities for pilot instructors to share their experience with the wider faculty community.
Evaluation and continuous improvement	• Use course metrics to adjust teaching as needed. • For students whose performance data indicates they are at risk in the class, communicate how they can get help or self-remediate. • Collect feedback from students and instructors at the midpoint of the pilot and at the end of the pilot. • Schedule regular check-ins with instructors teaching the pilot. • Review course metrics after each grading milestone such as exams.

Course Delivery

Learn how to make the case to students and fellow instructors as you begin to run your pilot course.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Course delivery

By this point, you're at the beginning of piloting your course with a small group of people who are early adopters. Throughout this process, you and your implementation team will continue to make the case for the use of adaptive courseware products. It's best to begin discussing the process and preliminary outcomes early and often with faculty and staff members across your department and institution. It's also important to continue engaging students through this process, as they are the key stakeholders in this project. Giving both faculty and students a voice in a confidential environment, such as in focus groups or surveys, is important to successful implementation. Subsequent sharing of the quantitative and qualitative data with all stakeholders provides clarity and a path for any necessary changes, which can truly make a case for expanding the use of adaptive courseware. Following this, academic capital can be developed and shared, such as presentations, articles, and blog posts on the implementation work.

WORKSTREAM GOALS

- Articulate to students how their data are being used to improve teaching and learning in the course.

- Articulate the use of adaptive courseware to new Course Instructors or implementation team members.

Prepare to pilot your course

Before you pilot, check out these two checklists to make sure you are ready to launch your course:

📑 [Adaptive Courseware Development Task List, Arizona State University](#)

📑 [Preflight Checklist, University of Mississippi](#)

Be transparent with students

Be transparent with students regarding the use of student data. Adaptive courseware collects large sets of data on a constant basis. Students may be unaware of how their performance is being tracked and used for their own individual and instructional purposes. Throughout the course, be clear with students how their data is influencing your instructional practices and decisions. This may look like the following actions:

- After each course milestone (the completion of a module or summative assessments for example) share aggregate results with students, and tie this information, if applicable, to metrics on time spent using the digital tool, how often students took practice exams, or student use of any optional tutorial and practice content.
- Provide opportunities for students to share, both anonymously and as a class unit, their experience of the digital tool, particularly in terms of how it prepared them or did not prepare them for a high-stakes assessment.
- Filter the performance metrics and feedback of racially minoritized students and those who are poverty-impacted to learn how the digital tool is addressing opportunity gaps in the course.

Make the case to new instructors

Prepare the case for adaptive courseware for incoming instructors or team members, and/or seasoned faculty who are hesitant to change their long-standing course. Institutions frequently experience turnover while new instructors and staff come into the college. This may result in new faculty or staff on the implementation team. Alternatively, more seasoned faculty members may not be interested in changing a course that has perennially been taught the same way. Continuing to articulate team member roles and responsibilities, and project needs, goals, and expectations, will provide consistent communication and level setting throughout the process. This can include the development of resources that make it easier to communicate with newer instructors, such as presentations or onboarding documents, which will also begin to lay the foundation to recruit new faculty and team members when the pilot is successful and the institution has decided to scale adaptive courseware to additional courses and departments. The importance of the department chair as part of the casemaking team cannot be overstated, as this person has the power to shape the culture and goals of the department.

PROJECT LEAD TIP

Create reporting templates.

Periodically reporting results throughout the project will ensure all institutional stakeholders are well informed on the progress of the project and challenges are addressed early in the process. Different audiences may have different needs in terms of reporting. Reporting requirements may also be required for external or internal funding sources as well. Creating templates or surveys with pre-build questions that are relevant for the various audiences that need to see the report can be a time-saving strategy to ensure reporting is done on time.
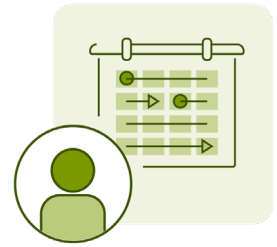
Evaluate student performance

When appropriate, compare student performance in pilot with a digital tool to student performance in classes not using the digital tool. *Change is only possible if you measure results.* Having a comparison group will also help you monitor successful course outcomes for the students in your course. Work with your academic department chair/dean, institutional leadership, or Institutional Research to identify a course (or series of courses) to be used as a comparison group. When using a comparison group of students, use an equity-minded approach to ensure that students from racially minority groups are disaggregated and goals are appropriately set to ensure their success in the course.

REFLECTION QUESTION

How are the instructors of the piloted course conveying to students the ways that the selected courseware will impact their learning experience?

Technology Considerations

Important considerations related to technology as you move through the Pilot phase.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Technology considerations

Technical support may need to be more involved in this phase than any other phase. Piloting the course will require the involvement of the IT department, the vendor, and instructional technologists (if available). There are several technical items that can be accounted for prior to beginning the course, but technical issues will likely arise as students move through the class and use courseware tools. In any case, you should prepare and provide resources and clear instructions for both students and instructors during courseware use.

WORKSTREAM GOALS

- Carry out a simulation test, prior to the start of the course.
- Identify solutions to technical issues that arise throughout the pilot.

Run a simulation in student mode

The faculty view of the digital tool will be different from the student's view. Becoming familiar with the student's view prior to the start of the course can help you identify issues before they arise. This will also help you navigate the courseware as students become familiar with the courseware themselves. The more familiar and comfortable you are with the courseware, the more authentic you will be when providing direct support to students. If your tool doesn't have a student view, ask the vendor to create a test with you as a student in the course so you can use the tool in student mode.

Run a simulation of the faculty dashboard

You may need to connect with the vendor and IT to ensure you are familiar with the components of the faculty dashboard, how to access your unique reports, and who can answer your questions about the dashboard when they arise. There may also be certain capabilities that were guaranteed when you agreed to use a particular vendor that may not be turned on or have changed since the contract was negotiated. The simulation will allow you to troubleshoot those issues prior to beginning the course.

Document the solutions to technical issues

Remember to document technical issues and solutions for yourself and new Course Instructors using the technology. Documenting these solutions will lay the groundwork for the IT department, vendors, and institutions to prepare for scaling the courseware. Depending on the required solutions and long-term strategies, in addition to speaking with administration about funding IT and internet access equipment, the team may also consider applying for state and federal grant funds to fund institutional technology infrastructure improvements.

Provide clear onboarding instructions

To reiterate, it's critical that students are aware of how to access and troubleshoot any areas that may not be working clearly. If students are having trouble navigating the site, completing assignments, or are unclear how the new tools will enhance their learning, students will become frustrated and unmotivated.

Before you pilot, be sure to check the following technology considerations:

- Ensure all links and videos are working correctly.
- Check courseware for accessibility by a specialist using software such as a screen reader.
- Simulate courseware in student mode to check for user experience success and accuracy, including assessments and assignments.

Finally, make sure students know where to go for technical assistance with the courseware. This might include the vendor's helpline, your institution's IT department, or a searchable set of helpful resources on the vendor's website.

You can refer to this resource developed by instructional designers at Achieving the Dream for ideas about onboarding students successfully.

REFLECTION QUESTION

In addition to a clear syllabus statement, what additional resources can be created to help students onboard onto the courseware smoothly?

Tool Distribution

Tips for an equity-minded distribution and evaluation of the use of your selected courseware.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Tool distribution

You are nearly ready to teach your pilot sections with adaptive courseware. However, there are still several processes to ensure the tool has been successfully distributed to students, and you are still evaluating the tool during the pilot.

WORKSTREAM GOALS

- Determine how students gained access to the courseware.

- Create a student-friendly resource to train students on how to use the tool and to address technical issues.

Work with students

Ensure students can purchase the courseware on time. Based on what was agreed upon with the vendor, IT, and institutional leadership there may be several ways students can gain access to the courseware. Batch sign-on for an entire class or all enrollments in a multi-section course are generally associated with digital tools purchased at the institution or department level. If students are required to individually purchase access codes or a product subscription, be sure they have detailed purchasing instructions. Depending on the distribution agreement from the vendor, students may also have issues purchasing the courseware, based on the timing of their financial aid disbursement or other impeding factors preventing them from immediately accessing the data.

There are typically three options for the distribution of courseware to students:

Option 1: The department or institution has implemented a course fee so that students automatically have access to the courseware when they register for the course.

Option 2: The students will purchase an access code through the campus bookstore, and it is confirmed the bookstore has enough codes to sell to students.

Option 3: Students will purchase the access code through the vendor or an online third party, and information has been given to students so they know exactly which ISBN and/or product to purchase.

Work with your vendor to provide one or more of the following solutions:

- Ensure instructors have access to scholarship access codes for students for whom the purchase of the courseware is a financial burden.
- Extend the preview access window for students who may be waiting for financial aid disbursements to purchase the courseware.
- Have a plan for tracking students' purchase of the courseware and how much they pay for it.

Students should also be fully aware of the purchasing options that are available to them. Some vendors may prevent students from purchasing content outside of the negotiated contract terms. This may have a negative impact on students who are unable to purchase courseware through the approved purchaser. For example, if the courseware is available for a lower purchase price elsewhere and students are prevented from purchasing it elsewhere, this may cause an undue cost burden on the student.

Provide clear onboarding instructions onto the courseware

Students should be introduced to the technology through an onboarding and exploration process. Refrain from assigning high stakes assignments and tests prior to students becoming comfortable with the technology. Many vendors already have onboarding tutorials, so you may just need to direct students to those resources. If you need to make your own onboarding resources for students, you may need to work with your Course Designer and the CTL to create visuals and video walkthroughs.

Monitor student access

Check the instructor dashboard daily in the first week to monitor student logins to the courseware. Reach out to students who have not purchased access or who have not logged in to the courseware to see if they require a scholarship code, directions on how to purchase access or to log into the courseware, or simply a nudge to get started working in the courseware.

REFLECTION QUESTION

If students or instructors have technical issues, where can I direct them to resolve them immediately?

Professional Development

Guidance on how to focus your professional development efforts and funding during the Pilot phase.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Professional development

In the Pilot phase, your engagement with professional development may shift from design to training, community building, and feedback.

WORKSTREAM GOALS

- Create a learning community for instructors to share resources, ideas, and data.

Facilitate learning communities

Instructors who are piloting digital tools should regularly check in with each other or with the Project Lead. This is particularly important following milestone course activities such as the first exam or project submission. One way to accomplish this is to create a learning community in which instructors can share experiences and build a cross-institutional understanding of courses and practices that embed adaptive courseware.

If you are interested in learning more about faculty learning communities, see the resources below.

📄 [Building the Ship while Sailing: Faculty Learning Communities and Technology](#)

📄 [The Faculty Community Learning Community in Action: Cuyahoga Community College](#)

Work with your vendor

Work with the vendor of your courseware product to arrange training sessions for instructors to effectively use the courseware. In this training, be sure to focus on the following:

- Aligning courseware content and assessments with established course content and assessments.
- Using the faculty dashboard to view and act on learning analytics.
- Understanding how to edit courseware to correct errors or make updates.
- Familiarizing faculty with the student view of content, assessments, and their own dashboard data.

According to a 2020 report by GlobalMindEd, "students want faculty to be finessed in the digital learning environment. When they are not, students feel alone in the learning process."[1]

REFLECTION QUESTION

How can the Project Lead and/or the executive sponsor support me to ensure I have continued opportunities to share resources, ideas, and data with instructors and staff?

References

1   *"Student Speak: Student Voices Informing Educational Strategies." GlobalMindEd. Carter, C.; Mosby Tyler, N.; Williams, J.; 2020.*

Evaluation and Continuous Improvement

Guidance for evaluating your progress so far and identifying opportunities to improve your pilot as you move through the term.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Evaluation and continuous improvement

The Pilot phase will encompass many iterations to ensure the project goals and course outcomes are fully met. This process also means acknowledging that while the course revision and digital tools are working well for one group of students, there may be other groups of students who are not performing as desired. The leadership team should discuss ways to improve equity for these groups.
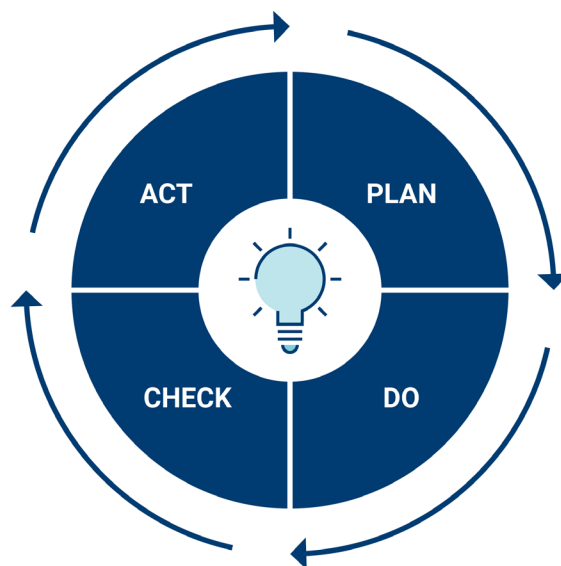
The PDCA (Plan-Do-Check-Act) Cycle is a useful framework for continuous improvement.

WORKSTREAM GOALS

- Use learning analytics to improve the user experience of the digital tool for students and instructors.

- Use feedback from students and instructors to make improvements related to the course revision such as teaching and learning strategies, and both formative and summative assessments.

PROJECT LEAD TIP

Schedule regular check-ins with the pilot instructors.

As instructors are piloting their course, the Project Lead should be organizing intentional ways to check in with Course Instructors throughout the pilot. This will help you and the instructor understand the needs of the project to communicate those needs to other stakeholders. This is also a way to continue to document key milestones, successes, and challenges they may be experiencing. Here are some items to consider checking in on when meeting with instructors:

- Reviewing the course metrics after each grading milestone such as exams to ensure alignment on course goals.

- Solicit feedback about what is going well and what challenges instructors are encountering.

- Reflecting on how the course revision has changed their teaching and student learning.

- Courseware data that was useful when identifying a course or individual academic intervention.
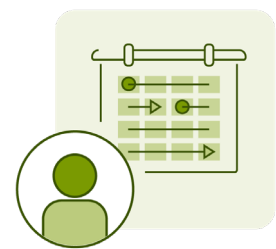
Use learning analytics

Use learning analytics to gain course insight and iterate on course content and instructional strategies. Analyzing the data you get from the adaptive courseware product should happen throughout the pilot process. Using the data on the faculty dashboard will allow you to quickly respond to issues the courseware and course content. If possible, disaggregate the data by racially minoritized student groups (Black, Latinx, Pacific Islander, and Indigenous), to ensure iterations of the course are targeting the correct group of students to create racial equity in course outcomes.

For more information on effectively using Learning Analytics, please refer to the resources below:

📖 **Learning Analytics Toolkit, Digital Learning Research Network**

📖 **Learning Analytics Strategy Toolkit, Tyton Partners**

Generate student feedback

Generate authentic feedback from students and instructors. You want to capture the full story of the use of adaptive courseware in your course. Engaging students through the process will ensure you'll receive relevant and timely feedback to make changes to the course, the courseware, or both. Click here to learn more about student experiences using adaptive courseware. You can also find examples of focus group questions and survey questions for both students and instructors here.

Solicit feedback from racially minoritized students. Students from minoritized communities and students impacted by poverty may have different concerns or challenges regarding the courseware than white students and well-resourced students. Creating items such as anonymous surveys distributed throughout the course and/or, intentional one-on-one meetings with students to check-in and discuss aggregated results can provide you with insight into the dashboard that data alone cannot. This can also be an opportunity to connect with institutional colleagues, external peers, or racial equity consultants to interpret the feedback you received from students. Educators dedicated to eradicating racial inequity in education will have resources and advice on how to act on the feedback you received to ensure the students' concerns are appropriately addressed. It is important to note that while there may be experts on campus, it is critical to continue engaging in professional development opportunities on topics of racial and socioeconomic equity and culturally relevant teaching in the classroom.

Before you pilot your revised course with the courseware, make sure of the following:

- The pilot midpoint/check-in with students is in place.
- The pilot endpoint/evaluation with students is in place.
- The pilot endpoint/evaluation with instructors is in place.

REFLECTION QUESTION
_____

Based on student feedback and the courseware's dashboard, what immediate revisions to the course can be implemented to fit the needs of students in my course(s)?

Case Studies

Examples from institutions who exemplify the process for the Pilot phase.

University of Mississippi (UM): Flexibility for faculty in a multi-section course

The course revision of the first-year writing course centered on providing faculty with adaptive courseware that would help them review basic writing skills with students who need additional instruction and practice. Faculty are additionally supported by a repository of resources and a forum to share ideas.

📑 **Click here to read more about UM's Pilot process.**

University of Texas Rio Grande Valley (UTR): Improving student success through multi-section coordination

The revision of Calculus 1 and 2 involved creating a community of practice around continuous improvement, building a repository of resources for instructors, adopting a common text supported by adaptive courseware, coordinating assessments, and mapping the curriculum to align learning objectives with subsequent courses in the mathematics sequence.
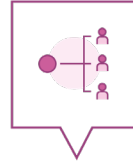
📑 **Click here to read more about UTR's Pilot process.**

Find more resources at everylearnereverywhere.org

For questions, contact resources@everylearner.org

| DESIGN | PILOT | OPTIMIZE |

ADAPTIVE COURSEWARE IMPLEMENTATION GUIDE

Phase 3: Optimize

Introduction

An overview of what you will learn in the Optimize phase.

DESIGN	PILOT	OPTIMIZE

Introduction

Congratulations! You've launched your pilot and you're ready to optimize and scale across your institution. Now that you have launched adaptive courseware in your course, you are likely in a phase where you are evaluating the success of the pilot and identifying long-term solutions for scalable implementation. During this phase, you are making your course better using the student feedback, data dashboards, and lessons learned while piloting the courseware. There may be circumstances where the pilot did not produce the outcomes you were looking for. At that point, you and your implementation team should determine if revisiting some or all of the Pilot phase is needed before moving forward with scaling to additional courses.

Additionally, a successful pilot in one course may not scale across different disciplines. If additional disciplines or courses are identified to implement courseware, the Pilot phase needs to be revisited and the courseware must be adapted to the new discipline.

## By the end of the Optimize phase, you should be able to

- Determine the success of the pilot based on the metrics, data, and feedback you gathered.
- Implement course iterations based on student feedback and dashboard data.

Summary of workstreams in the "Optimize" phase

WORKSTREAM	DESCRIPTION
Evaluating and reporting on course outcomes	• Evaluate the success of the pilot. • Create a report to document the pilot outcomes.
Technology and tool considerations	• Based on the success of the scale, re-evaluate technology restraints to incorporate additional adaptive courseware products into courses.
Professional development	• Identify opportunities to share pilot results. • Continue to engage in Diversity, Equity, and Inclusion (DEI) training. • Create a community of practice repositories to onboard new instructors and graduate instructors.
Team maintenance and change management	• Connect with faculty at other institutions to share and collaborate on best practices.
Continuous improvement	• Review the pilot course(s) data and feedback and make iterations as needed. • Revise assessments and/or content based on item analysis of assessments.

Evaluation and Reporting on Course Outcomes

Tips for an equity-minded distribution and evaluation of the use of your selected courseware.
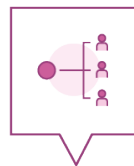
DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Evaluation and reporting on course outcomes

Determining the success of the pilot will involve gathering outcome data and garnering student feedback. It will also include working with the Project Lead to create a report for institutional leadership to evaluate whether to consider expanding the tools to additional courses.

WORKSTREAM GOALS

- Evaluate the success of the pilot.
- Create a report to document the pilot outcomes.

Analyze available pilot data

Conduct data analysis in partnership with your Institutional Research team to determine to what extent the pilot met the goals outlined in your implementation plan. If the pilot duration extends beyond a semester, you can look at how students in the pilot course and those not in the pilot course performed in a course for which the pilot was a prerequisite. The data should also reflect the student and Course Instructor's qualitative feedback gathered throughout the pilot. Some pilot data may not be available because a measure of success of the pilot is linked to success in subsequent courses.

Develop reports on pilot outcomes and effects

Include quantitative data on specific outcomes from the pilot implementations and demonstrate progress toward implementation goals. Use qualitative feedback from Course Instructors and students to assess the impacts of the implementation as well. Make sure to include the positive and negative, as well as information on how negative effects will be mitigated in the future. Avoid reporting data on all students or grouping all the racially minoritized and poverty-impacted students together as one data set. Rather, include data on outcomes for Black, Latinx, Pacific Islander, and Indigenous students as disaggregated data sets. This will allow for you and the institution to see a complete picture of how adaptive courseware impacts the outcomes and if it had an impact on student success metrics for different student groups.

REFLECTION QUESTION

How did the redesigned course and courseware impact the learning experience for students who are Black, Latinx, Asian-American, Indigenous, and/or poverty-impacted?

Technology and Tool Considerations

Tips for an equity-minded distribution and evaluation of the use of your selected courseware.
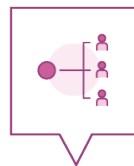
DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Technology and tool considerations

If the project moves to scaled implementation, there will be several technical considerations to take into account to ensure it is scaled successfully. Documentation from the pilot process will help the scaled implementation team and institutional leadership to determine the technical solutions that were successful during the piloted phase. The primary focus of improving technology infrastructure and capabilities is to ensure students — especially those with limited to no access to technology — can be successful in the scaled implementation.

WORKSTREAM GOALS

- Evaluate institutional and student technology restraints to scaled implementation.
- Conduct a needs assessment for technology requirements for scale.

Collaborate with institutional leadership

Share solutions and resources with institutional leadership and the scaled implementation team. There are several technical solutions you and your implementation team worked through during the pilot. Provide IT documentation to the new implementation team and institutional leadership to help them provide a basis for the issues you experienced and overcame over the course of the project. Ensure you are also including the barriers and solutions that students experienced when purchasing, accessing, and using the courseware. Hosting events such as Brown Bag Lunches or institutional sponsored lunches where instructors, Deans, Chairs, and staff can have an open discussion can also be helpful.

Conduct a student focus group

Consider also conducting a student focus group to discuss how the technology worked or did not work for them. As you scale to new students, new courses, and new populations of students, it is important to keep working with students to make sure courseware is accessible, actually helping to solve the problem, and not exacerbating inequities that already exist. For sample student focus group questions, refer to the Adaptive Courseware Workbook, here.

REFLECTION QUESTION

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What technical, teaching, and learning support needs do students and instructors have in other disciplines where courseware is being considered?

Professional Development

Guidance on how to focus your professional development efforts and funding during the Optimize phase.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Professional development

Engaging in professional development will still be necessary in this phase. Professional development will be largely based on the decision your institution has made to scale adaptive courseware. If they have chosen to move forward with scaled implementation, you may be asked to support the new Course Instructors whose courses were selected to be part of it. As you bring new people on board, consider the Professional Development points mentioned in the Design and Pilot phases.

WORKSTREAM GOALS

- Identify opportunities to share pilot results.
- Create opportunities to discuss reports.

Train faculty

Provide training to faculty on reading and interpreting dashboard data and the use of adaptive courseware. Consider asking faculty from the pilot course to lead aspects of training for new faculty, and get feedback from all faculty on areas where they feel they would benefit from learning more.

Share reports on pilot outcomes and effects

Create opportunities for faculty and instructional designers to review and discuss pilot outcomes and effects. Sense-making/data interpretation discussions between faculty and instructional designers and other pilot stakeholders is an important step in iteration for subsequent pilots and/or scaling the revisions more widely.

Use your learning to further solidify the case for adaptive courseware use. Learn from the implementation to support adoption decisions in other areas of your own institution or to inform implementations of other types of digital learning. Share your findings with other institutions or publish openly to help build a broader evidence base for the use of adaptive courseware.

Share your process with the institution. The process to implement adaptive courseware will be helpful for other courses and departments implementing it at your institution. Creating a public forum through the Center for Teaching and Learning or another department will help to make these processes and results public and, in turn, support the new scaled implementation team.

REFLECTION QUESTION
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Which institutions are implementing adaptive courseware and how might I connect with those faculty to learn and share best practices?

Team Maintenance and Change Management

As you move towards scale, ensure your team is committed and up to speed.
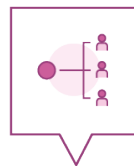
DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Team maintenance and change management

Scaling adaptive courseware to additional sections or piloting it in new disciplines may require a large-scale shift in institutional attitudes and resources. Your experience piloting courseware gives you a unique insight and expertise to support new instructors and team members' work through the process.

WORKSTREAM GOALS

- Partner with pilot faculty to create a network of support and professional mentorship.

- Connect with faculty at other institutions to share and collaborate on best practices.

Educate new stakeholders

Faculty and administrator turnover, as well as expansion of the implementation to new groups, will make ongoing communication and the education part of scaling even when the implementation is no longer expanding. With the new implementation team and Project Lead, develop a training plan that accounts for varying levels of familiarity and comfort with adaptive courseware. If you're involved in scaled implementation, you'll also want to continue to update the plan with results from your implementation to build buy-in and disseminate new discoveries or best practices.

Support new Course Instructors and implementation team members

Scaling adaptive courseware will require the support of several faculty and staff members, especially those who initially piloted the course. Work with the scaled implementation team and Center for Teaching and Learning to create a professional mentorship program to ensure the new Course Instructors have the support needed to be successful.

Involve departmental and institutional leadership

By documenting the progress and results of the pilot, you have a starting place to ask for additional support for additional piloting or to scale the use of adaptive courseware. Scheduling a formal conversation with the academic department or institutional leadership to share the results of the pilot may alleviate major roadblocks in the future.

Present the case for adaptive courseware to faculty and students

Determine how much of the "case" you built for implementation should be shared publicly to earn buy-in from your faculty and students. Articulate your rationale for expanding the implementation, including potential positive and negative impacts on faculty and students, and how the implementation will support broader institutional goals. As you expand or think about expanding to other courses or within the same program of study, students will have feedback on what support is needed where.

Work with institutional leadership to develop new participation incentives

Undertaking a scaled implementation effort will require more faculty, staff, and students to be engaged in the work and may be outside of the scope of their role at the institution. Institutional leadership will benefit from understanding how the incentives motivated or demotivated you through this process and how to improve the incentives going forward.

REFLECTION QUESTION

What was the biggest challenge you overcame in this project? How did you overcome it? What lessons did you learn from that challenge you can share with your colleagues implementing adaptive courseware in their courses?

Continuous Improvement

Identify opportunities to improve your course for the future and support your institution's efforts to scale digital learning initiatives.

DESIGN	PILOT	OPTIMIZE

WORKSTREAM

Continuous improvement

After the pilot has concluded and you have analyzed the outcomes, there may be several iterations that need to be done to the course should the pilot move forward to scale. Even if the pilot does not move to scale, analyzing the outcomes and feedback can garner key insights on where the course can be improved in the next term.
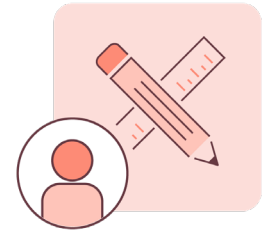
Decisions to scale should include discussions around how broader implementation across sections will maximize the benefits of courseware to minoritized and poverty-impacted students.

WORKSTREAM GOALS

- Review the pilot course(s) data and feedback and make iterations as needed.
- Revise assessments and/or content based on item analysis of assessments.

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COURSE DESIGNER TIP

Support Course Instructors in revising their course(s).

Course Designers can have a key role in the continuous improvement process in supporting Course Instructors to make thoughtful revisions to their course for incoming students. Work with instructors to improve the course content and design based on your item analysis and instructor and student feedback. If a Learning Management System (LMS), instructors may also need support re-organizing course content, performing an item analysis to flag problematic assessment items and ensure course content still aligns with the course objectives.

Revise your course

Revise assessments and/or content based on the courseware data and student feedback. This may require the assistance of the vendor, the Institutional Research team, instructional designers/ technologists, or the Center for Teaching and Learning. The aforementioned offices and individuals often have real-time data to provide to instructors throughout the course. Analyzing assessment data will ensure your assessments are measuring student progress towards the learning outcomes. In the Pilot phase, you likely adjusted content based on dashboard data and student feedback. During this phase, you can determine if those adjustments lead to better outcomes, and if not, how the course can be adjusted further. You may also need to include students on the course revision team to advise on equity issues such as representation, access, and relevance.

Invite additional supports

Invite additional student or technology support structures to the course. You introduced several new student support structures to the course. At this point in the phase, you should evaluate which of those supports were helpful to students and what, if any, new ideas need to be introduced to the course. This process will require inquiring with student support services, student advising, and technology support on the resources and structures that are available.

If there is no statistical difference between student performance in the pilot sections and in unrevised sections of the course, consider other metrics for scaling the use of adaptive courseware:

- Did students in the adaptive pilot section pay more or less for course materials?
- Did students in the adaptive pilot report a more satisfactory learning experience?
- Did instructors of the adaptive pilot report a more satisfactory teaching experience?

Continue working to improve

Scaling a course revision using digital tools should not mark the end of your course improvement efforts. Continuous assessment of teaching and learning is essential for continuous improvement. It is particularly important to assess teaching and learning for minoritized and poverty-impacted students to be sure they benefit from improvement efforts.

REFLECTION QUESTION

Based on student and instructor feedback and courseware data, what improvements can be made in the course to improve the teaching and learning experience in the course?

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Case Studies

Examples from institutions who exemplify the process for the Optimize phase.

University of Central Florida (UCF): Customizing a course for a specific student population

Instructors built a revised version of Elementary Spanish in an adaptive courseware platform with original content that is gamified and based on the lived experience of the Hispanic populations in central Florida.

📄 **Click here to read more about the optimization and scaling efforts at UCF.**

Medgar Evars College: Active learning and learning analytics for student success

Dr. William Carr has increased student confidence in explaining scientific content through a series of course revisions based on student performance data gathered through adaptive learning courseware. The most impactful revision involves students employing an open-source digital learning platform to write and answer assessment questions on course content.

📄 **Click here to read more about the optimization and scaling efforts at Medgar Evars College.**

Kingsborough Community College: Making test bank questions relevant

Using the item analysis feature of her biology course's adaptive learning courseware, Dr. Kristin Polizzotto gained a deeper understanding of student performance on questions written with unnecessarily complex language. She began rewriting assessment questions to maximize language clarity for non-native speakers, so each question measures student mastery of the learning objective rather than measuring student reading comprehension.
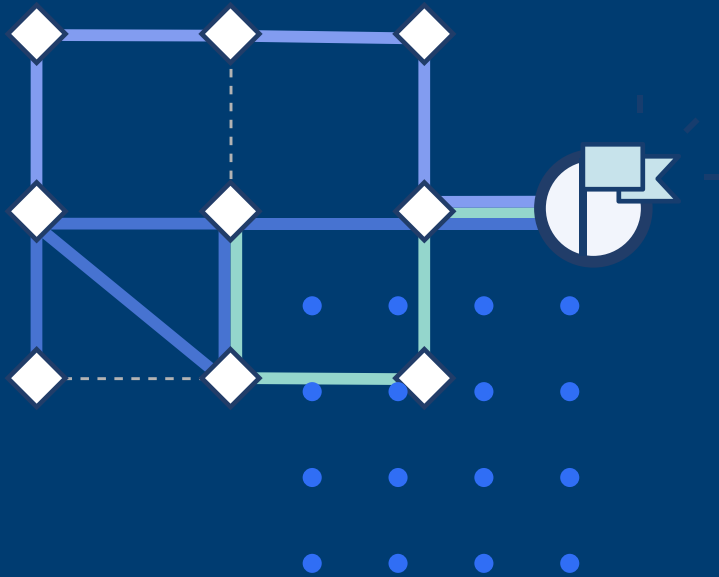
📄 **Click here to read more about the optimization and scaling efforts at Kingsborough Community College.**

Find more resources at everylearnereverywhere.org

For questions, contact resources@everylearner.org