

# Digital Learning Communications Brief

**Audience:** This document is intended to be a resource for Bill & Melinda Gates Foundation Postsecondary Success team members, grantees, support partners, and other stakeholders to leverage when speaking or answering questions about our digital learning and exemplar courseware development efforts.

## Key Messaging: Our Aspiration

**The Bill & Melinda Gates Foundation believes that every person deserves the chance to live a healthy, productive life.** In the U.S., this means working to ensure that everyone can learn, grow, and get ahead, regardless of race, gender, ethnicity, or family income.

**This includes the opportunity to achieve an education after high school that has value, which is more critical than ever before.** Virtually all the new jobs in today’s economy are going to people with post-high school education, and the unemployment rate for people with a high school diploma or less is twice that for those with a bachelor’s degree.

**The foundation’s Postsecondary Success (PS) strategy is dedicated to ensuring that many more students complete their certificates and degrees and eliminate race, ethnicity, and income as predictors of student success. We do this by supporting colleges and universities committed to transformation** – having a student-centered mission, setting goals and being accountable to make decisions, creating a collaborative environment focused on continuous improvement in policy and practice, and making a strategic commitment to deliver effective and equitable learning experiences so all students can achieve their best possible potential.

**Helping students get on the path to a certificate or degree and stay on that path is a key part of our transformation efforts.** Today’s college students are more diverse, ambitious, and eager to realize the benefit of a college degree. Many are working, raising families, and caring for family members. Online and blended (online and in-person) courses and programs can offer students both a high-quality learning experience and a flexible path to high-value degrees and credentials while balancing work and life demands in an uncertain time. But for too many students – especially students of color and students from low-income backgrounds, the college journey ends before completing a credential or degree, which is a loss for them, their families, and their communities.

**As part of the Postsecondary Success strategy, our digital learning portfolio aims to eliminate disparities in first year, general education courses and enable institutions to deliver more equitable learning outcomes for Black, Latino, Indigenous students, and students from low-income backgrounds.** To achieve this, we invest in evidence-based interventions (including practices, products, policy changes, and the postsecondary institutional improvement processes to effectively implement them) that address critical loss points for students on their higher education journey. Our approach aims to ensure development of high-quality tools, practices, and supports as well as the delivery of those offerings among institutions focused on learner-centered holistic transformation.

### How We Define Equity

We believe education equity is achieved when systems, policies and institutions operate to ensure that race and socioeconomic status are no longer entrenched and reliable predictors of student outcomes. Equity differs from equality, which is often used as a legal term to address a state of being equal in status, rights and opportunities. The concept of educational equity acknowledges the structural inequities embedded in higher education systems and the need to assess pedagogical approaches, methods, resources and supports.

### Our Equity Principles that Guide Our Work

#### With Our Courseware Development Partners:

- We articulate in our work a specific focus on racial equity and equity for poverty-affected students.
- We pursue equity in optimistic, anti-deficit, and sustainable ways.
- We consistently reflect on our biases and positionalities, seek input on our actions and unintended contradictions, hold ourselves accountable for improvement, and strengthen our skills.
- We critically analyze and aim to continuously improve the systems, structures, cultures, policies, and processes affecting education.

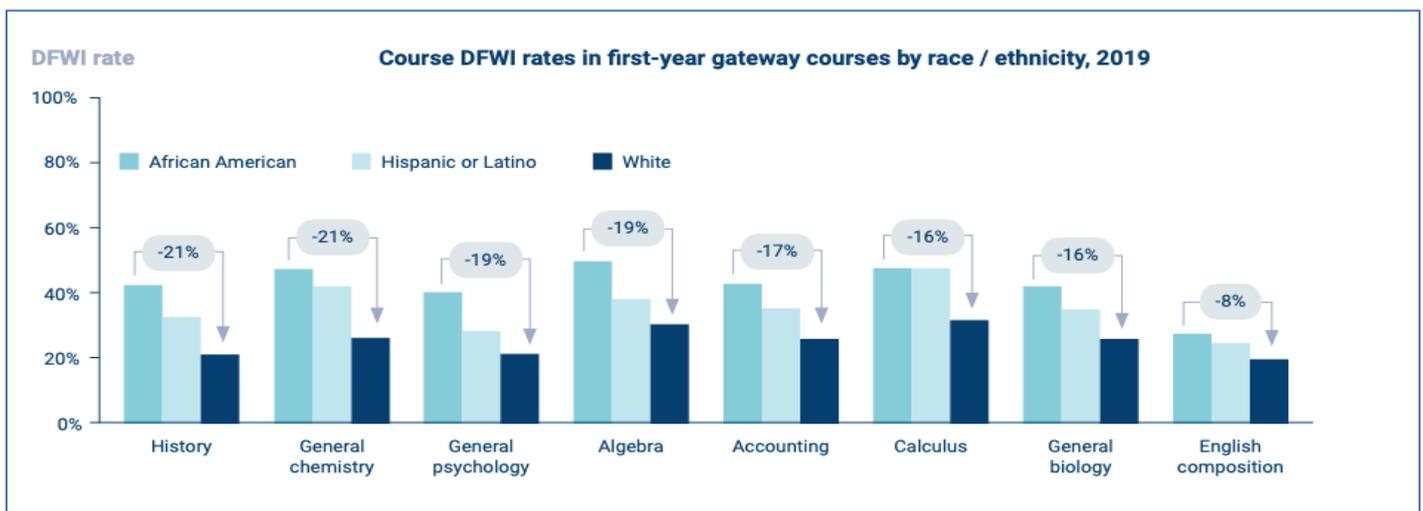
#### With Colleges and Universities:

- We focus on quantitative outcomes and on qualitative understandings of students’ experiences.
- We disaggregate data to the finest point possible, and resist the erasure of Native American, Asian American, and Pacific Islander students.
- We broaden the participation of people, partners, and perspectives to reflect the equity that students and their institutions deserve.
- We position poverty-affected and Black, Latinx, and Indigenous students, as well as those who share their lived experiences, as equity experts.

## Our Focus: Gateway Course Completion

### Gateway courses are an obstacle for many students looking for a clear path to a credential.

Each year, more than **three million students** enroll in roughly 20 general education courses in US higher education. According to research from the National Center for Academic Transformation (NCAT), just 25 courses generate roughly half of all student enrollments in community colleges and about a third of enrollments in four-year institutions. Successful completion of these courses is key to student progress toward a quality degree or credential. The Gardner Institute has identified these “gateway courses” as foundational, credit-bearing, lower-division courses, for which large numbers of students are at risk of failure, and thus stand as “gatekeepers” to degree completion. The DFW rate – or the percentage of students in these courses who earn a D or F grade or withdraw (“W”) from a course -- range from 15% at large, public research institutions, to 30-40% at comprehensive universities, and 50-60% at community colleges. Illustrated in the figure below, a 2019 Gardner Institute study found that DFW rates were 21% higher for Black students. A similar — though less stark — gap is present when viewed by Pell Grant status. Pell Grant recipients have significantly higher DFW rates than non-Pell recipients.<sup>1</sup> Poor outcomes in these courses often lead to significant drop-out rates between the first and second academic year, particularly among Black, Latino, Indigenous students, and students from low-income backgrounds, and also lead to longer time to a degree, higher cost of degree, and potential loss of Pell Grant and other financial assistance tied to academic performance, despite the deep commitment and high academic potential of impacted students.



Despite considerable efforts to determine the root causes of why racialized and minoritized students are often disproportionately represented in DFW rates in gateway courses, (mainly focusing on examining and expanding support systems outside the classroom like tutoring services, new advising models, and degree planning), course completion gaps for these subpopulations of students perniciously persist. While many of the non-instructional approaches to equitable student success show promise, more recent research efforts are focusing on understanding how the intentional and systematic design of four critical dimensions of the student learning experience—curriculum, instruction, assessment, and faculty professional development—align to produce the deep conceptual understanding and learning outcomes that are required to complete a quality course of study in gateway subjects, particularly for Black, Latino, Indigenous students, and students from low-income backgrounds.

## Our Approach

Since 2009, the foundation has invested more than \$180 million in improving undergraduate learning in the United States. We have worked with hundreds of institutions, educators, researchers, and partners to better understand how to improve student learning outcomes in gateway courses using the affordances of high-quality digital learning technologies like active, adaptive courseware combined with high impact instructional practices and institutional supports. Emerging evidence shows that active learning which is an approach to instruction that involves actively engaging students with the course material through problem solving, “learn by doing” activities, small group discussion, and other methods -- can reduce DFW rates when compared to the traditional lecture

<sup>1</sup>Koch, A.K., & Drake, B.M. (2018, November 6). Digging into the Disciplines I: Accounting for Failure-The Impact of Principles of Accounting Courses on Student Success and Equitable Outcomes. Gardner Institute. <https://www.jngi.org/blog/2018/11/6/digging-into-the-disciplines-the-impact-of-gateway-courses-in-accounting-calculus-and-chemistry-on-student-success>.

format (Freeman et al 2014). Further, blended learning methods that use digital courseware to enable active learning have demonstrated the most efficacious results for students by lowering DFW rates, increasing course completion rates, and closing the achievement gaps between Pell students and non-Pell students. An evaluation of courseware implementation demonstrated a greater effect on learning outcomes for underrepresented minorities (+0.16), when compared to the improvement experienced by all students (+0.09). (SRI, NGCC Evaluation, 2019). When implemented well by faculty, digital learning solutions like rich, interactive, and adaptive courseware has the potential to improve teaching and learning and narrow disparities in course completions, particularly for Black, Latino, Indigenous students, and students from low-income backgrounds.<sup>2</sup>

To expand our work to transform gateway learning experiences in ways that lead to measurable, equitable, and improved learning outcomes for all students, with an explicit focus on Black, Latino, Indigenous students, and students from low-income backgrounds, we are partnering with mission-aligned educators, researchers, and educational technology innovators to further our research and achieve three interrelated goals:

- **Expand the Availability and Awareness of High-Quality Courseware and Evidence-Based Teaching Practices** initially in two gateway courses – **Introduction to Statistics and General Chemistry**. We aim to launch a more comprehensive courseware research and development strategy to support the market development and scaled-usage of high-quality, equity-centered courseware; one that addresses gaps in availability, curriculum alignment between learning outcomes, activities, and assessments, and steers demand more proactively to quality courseware in two high-enrolling, high failure rate gateway courses.
- **Support Intentional Gateway Course Design Leveraging the Affordances of Courseware Technology and Evidence-Based Teaching Practices** by identifying best practices in equity-centered learning experience design, along with incentives, policies, and approaches that enable faculty (including adjuncts) to shift their instructional approach from lecture-based practices to evidence-based teaching practices that can be enabled by high-quality courseware.
- **Strengthen the Evidence Base for Blended and Online Course Methods** to better understand the effectiveness of blended and online learning methods, implementation conditions, and teaching and learning techniques affecting learning outcomes for Black, Latino, Indigenous students, and students from low-income backgrounds.

Our digital learning and courseware investments will provide incentives for faculty, administrators, researchers, and educational technology developers to design, develop, and scale better products and provide colleges and universities the opportunity to choose better products based on emerging research and evidence of what works best for today's students, especially for Black, Latino, and Indigenous students and students from low-income backgrounds.

## Our Courseware Development Partners



**Lumen Learning** is a dynamic Portland-based start-up dedicated to enabling unprecedented learning for all students by providing evidence-based tools and services to support effective teaching and learning practices. They will develop the exemplar Introductory Statistics courseware product that integrates their robust professional development platform (Lumen Circles), their student-facing personalized, active learning platform (Waymaker), best-in-class video, peer supports, data dashboards, and culturally relevant curriculum developed in partnership with The University of Texas at Austin's Charles A. Dana Center.



**ASU/CMU (partnership)**: Arizona State University and Carnegie Mellon University, two leading research universities have joined in a unique partnership with leading OER provider OpenStax to build upon Open Learning Initiative's (OLI) next generation open-source courseware technology (Torus) and adaptive learning capabilities, ASU's expertise in equity-centered user design and inquiry-based learning to develop the exemplar courseware product for Introductory Chemistry (two semester sequence).



**Macmillan Learning**, a privately held, family-owned education publishing and services company with a mission to improve lives through learning, will research, design, test, and/or iterate equity-centered enhancements to their market leading content and courseware products delivered on the ACHIEVE platform. Using Introduction to Psychology and Introduction to Sociology courseware, their research will focus on a) learning what in-program courseware resources most effectively support student metacognition and sense of belonging; b) if the inclusion of

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<sup>2</sup> Fox, K., Vignare, K., Yuan, L., Tesene, M., Beltran, K., Schweizer, H., Brokos, M & Seaborn, R. (2021, December 14). Strategies for Implementing Digital Learning Infrastructure to Support Equitable Outcomes: A Case-based Guidebook for Institutional Leaders. Every Learner Everywhere. <https://www.everylearnereverywhere.org/resources/>

evidence-based teaching (EBT) practices in courseware has a positive relationship with learning outcomes for BLI-LI students; and c) how to best develop culturally responsive content for all students.



**Center for Curriculum Redesign**, a non-profit global organization focused on designing and disseminating new curricula, will benchmark and develop a set of faculty and discipline-association aligned and equity-centered learning outcomes that advance the field's understanding of critical content, concepts, and competencies for each of the largest enrolling gateway 20 college courses.



**Digital Promise**, a non-profit organization that conducts innovative research in education to improve opportunities to learn for all learners, is conducting the efficacy research and implementation research for the Introductory Statistics exemplar courseware as well as the implementation research for the Chemistry exemplar courseware. In addition, Digital Promise also runs the Statistics Discipline Advisory Group (DAG).



**OpenStax**, a non-profit educational technology initiative based at Rice University dedicated to creating openly licensed textbooks, will develop open educational resources to promote availability of affordable and high-quality curriculum in postsecondary education.

## Our Digital Learning Research, Equity, and Support Partners



**ACUE (Association of College and University Education)** is a mission-oriented professional development organization focused on student success and equity through evidence-based teaching. In partnership with colleges and universities, ACUE prepares and credentials faculty in effective instruction and conducts longitudinal research on student impact. This study of gateway courses, involving eight nationally representative colleges and universities and over 700 faculty members including adjuncts, will examine the effects of evidence-based teaching (EBT) professional development and the use of digital learning tools on faculty mindsets and instructional methods and the consequent impact on student mindsets and outcomes.



**Blink UX**, one of the world's leading UX research and design firms with 20+ years' experience bringing evidence from research to improve 400+ products and services, will conduct exploratory user research with students and faculty to holistically understand the current experience of Black, Latinx, Indigenous students, as well as students impacted by poverty who are taking gateway statistics and chemistry courses. Topics of investigation include instruction, curriculum, courseware, and assessment by specific modalities, as well as contextual factors impacting students' experience.



**CORA (The Center for Organizational Responsibility and Advancement)** is an accredited-affiliated professional learning organization that builds educator capacity for infusing equity-centered and culturally affirming practices into their work, will advance the field's understanding of how digital learning can be a tool for equity, and accelerate the number of faculty at broad access institutions who begin employing these tools in the near term.



**Education Design Lab** is a national non-profit that focuses on designing education toward the future of work, will deepen the field's understanding of stakeholders influencing curriculum and pedagogical decisions in higher education, with a focus on participatory and equity-centered mixed methods to uncover the needs, expectations, and concerns of those who have a stake in the success of gateway courses.



**EDUCAUSE** is a non-profit association and the largest community of technology, academic, industry, and campus leaders that focuses on advancing higher education using IT, is the program owner that will manage and advance [coursegateway.org](https://coursegateway.org) - a new BMGF supported decision-support web application to help expand awareness and adoption of high-quality, equity-centered courseware.



**Intentional Futures**, an innovative research, design, and strategy consultancy, has developed the current iteration of the Target Product Profile leveraging user insights, literature review, and elements of [coursegateway.org](https://coursegateway.org). (The Target Product Profile is the codification of our vision for exemplary courseware, developed through research and engagement with target population students and faculty.) They continue to work on the next iteration of the Target Product Profile along with Tyton Partners.



**ITHAKA S+R**, a non-profit organization providing research and strategic guidance for academic and cultural communities on economic, technological, and demographic change, will be gathering and analyzing empirical research on student motivation, student engagement, and faculty and student time, and the impact of each of these

on learning. Ithaka will also be engaged to synthesize learning across all components of the discovery phase of the courseware development work.



**PARITII** is a firm that operates at the intersection of innovation and DEI and brings data-driven and equitable approaches to medicine, technology, and education. They provide clients with equity-aligned strategies in the realms of product design & development, user and system research, and organizational change.



**Substantial**, an industry-leading consulting studio that delivers high-quality research and design with unparalleled technical excellence, will develop user personas to understand the courseware user, their journey, their unique needs and interests and embed these personas into the solutions R&D development process. They will also build a network of equity-first technical assistance providers to assist courseware development partners.



**Tyton Partners**, a leading provider of strategy consulting services to the global knowledge sector, will provide current and detailed landscape analysis and comparative product review of available core and supplemental curriculum and courseware offerings in general statistics and general chemistry, and provide critical input into the next phase of the Target Product Profile development, and exemplar courseware development.

## Our Digital Learning Solution Network



**Every Learner Everywhere (ELE)** is a network of 12 partner organizations working together to support teaching and learning transformation in higher education institutions. ELE's work focuses on helping institutions improve learning outcomes for Black, Latino, Indigenous students, and students from low-income backgrounds using effective, equity-centered gateway course design, and active, adaptive learning technology paired with evidence-based teaching practices.

## Questions and Answers

### What is Digital Learning?

Digital learning is instruction facilitated by technology that gives learners more control over their learning time, place, path and/or pace. Digital learning includes a broad range of content and communication tools, curricular models, design strategies, and services that can enhance and support the student learning experience in face-to-face, blended, and online learning environments.

### What is digital learning courseware?

High quality digital courseware has three elements:

1. instructional content that is scoped and sequenced to support delivery of an entire course
2. purpose-built software
3. assessment to inform the personalization of instruction.

Courseware can either be all-in-one, disseminated via an institution's learning management systems (LMS), or a collection of tools aggregated by a course delivery platform. Courseware typically functions as core curriculum and replaces traditional print textbooks in an academic course. Macmillan Learning's [Achieve](#), Lumen Learning's [Waymaker platform](#), and Arizona State University's InSpark platform and [BioBeyond courseware](#) are all examples of courseware products. Courseware includes rich, interactive, and engaging multi-media content, activities, and assessments to help students explore and understand complex ideas and concepts. Adaptive courseware guides students through personalized learning journeys using immediate feedback and tailors the learning experience to each individual student based on their knowledge, skills, and learning needs. Courseware interoperates with most leading learning management systems and is used by faculty across a range of institutional types and learning environments.

High-quality, affordable, and equity-focused courseware can also enable:

- Data-informed dashboards that help faculty determine when a student is struggling with specific concepts
- Tailored learning experiences to each student at the point of need
- Enhanced student engagement with rich, interactive practice activities with robust feedback
- More affordable and flexible learning solutions than traditional, print textbooks

## Why courseware?

Courseware can innovate the student learning experience by making learning more accessible, engaging, interactive, personalized, and cost-effective. High-quality, affordable courseware can also support faculty implementing evidence-based teaching practices such as active learning to better support equitable student success.

Our work over the last decade has shown that:

- Gateway courses are a major student loss point because they are expensive, not well supported, and taught mostly by under-resourced adjunct faculty.
- Active, adaptive learning delivered through high-quality courseware can support teaching methods and new delivery models such as blended learning that better meet the needs of today's students.
- Even prior to the COVID-19 pandemic, enrollments in blended and online courses have increased annually between 2009-2019, despite overall enrollment declines.
- Courseware has been shown to increase student learning in certain contexts and decrease instructional and student costs (based on 28 impact studies across 36,000 students in the Next Generation Courseware Challenge)

With our research partners, we endeavor to expand this evidence base and test and refine novel approaches and interventions that will help educators and administrative leaders meet the learning needs of minoritized students through effective digital course design and teaching strategies.

## Why were Statistics and Chemistry chosen as the first two courseware development projects?

Based on market need and capabilities shared by developers during an extensive RFP process in 2021, we believe that both **General Chemistry** and **Introductory Statistics** present compelling opportunities for complementary exemplars with potential to impact our focus students while also driving market innovation and setting a new standard for excellence in the market.

- Both courses have high annual enrollments and high drop-withdraw-fail-incomplete (DFWI) rates (23% DFWI rate for Chemistry / 24% DFWI rate for Statistics), making them excellent candidates for new, innovative, and more effective courseware. Targeting high enrollment courses also increases our potential to recruit sufficient populations of students from our priority populations to enable rigorous research design.
- Each course is increasingly offered as a requirement in its related domain of study and subsequent STEM pathways. For example, enrollment in Statistics is growing rapidly due to its adoption as a pillar of both Math Pathway & Guided Pathway reforms. Similarly, Chemistry is a key requirement for pathways like health and nursing, which are high growth sectors for future jobs.
- Both courses have strong courseware adoption rates by faculty (36% and 43% respectively in Chemistry and Statistics), greatly simplifying the challenge for developers to secure pilot sites. Faculty in both courses place relatively strong value on evidence-based teaching, providing a good testbed for validating assumptions about how courseware can best enable and support evidence-based teaching practices.
- Last, both courses offer opportunities to test various content and technical approaches to improving student learning outcomes such as eliminating knowledge gaps in chemistry, engaging students with real-world problems and data sets, while also allowing for opportunities to measure and assess shifts and improvements in content.

## Are the foundation and partners just developing courseware for Statistics and Chemistry?

No. Our goal is to catalyze innovation from educators, researchers, and educational technology providers using the insights gained from the development and implementation of the initial exemplars (Chemistry and Statistics) to expand the availability of high-quality, equity-minded courseware for the top 20 largest enrolling gateway courses and courses with highest DFW rates for students.

## When will the two exemplars be ready for pilots with our scaling partners?

The beta versions of the two exemplars (or minimum viable product – MVP) are scheduled to be ready for use by pilot institutions in 2023 and will be more broadly available after the beta versions are evaluated and refined. The foundation and courseware partners are actively recruiting institutional partners for pilots.

## The Foundation has a long track record of investing in educational technology – particularly courseware. What differentiates this new phase of activity?

Five key factors distinguish our new work on courseware from previous initiatives:

1. **Active engagement of focus populations in courseware design and development.** Partners will develop courseware in design sprints that incorporate the voice of the students and faculty to ensure that the final courseware products center their needs and lived experiences. Our current initiative aims to be more intentional in prioritizing meeting the needs of diverse students and instructors (including adjuncts). We are also investing in user research that not only focuses on real-time student and faculty experiences, specifically the experiences and needs of Black, Latino, Indigenous students, and students from low-income backgrounds
2. **Robust efficacy research to understand courseware impact on student outcomes.** Specifically, our research partners will focus on measuring the specific and disaggregated impact and efficacy of the use of this courseware by our focus populations.
3. **Focus on complementing evidence-based teaching and instructional practices.** Having “best in class” courseware alone will not improve student outcomes unless it is combined with evidence-based teaching and instructional practices. Thus, we also focus on implementation and professional development support for faculty to best implement the courseware and support their teaching practices.
4. **Exemplars to influence the market.** Strong partnerships with educators, equity experts, researchers, educational technology providers, publishers, and students from historically underserved communities will produce novel approaches, practices, tools, and blended learning methods for institutions shifting to learner-centered educational models. Corresponding research and implementation partnerships to pilot/test and refine the courseware will help continuous improvement efforts.
5. **Catalyzing strategic institutional change and sustainability.** Bringing together mission-aligned providers with institutional partners prioritizing equity to ensure learning success and eliminate disparities in outcomes for Black, Latino, Indigenous students, and students from low-income backgrounds.

### Why did the foundation choose to invest in Lumen Learning and Arizona State University/Carnegie Mellon University for this work?

Lumen Learning and ASU/CMU are well recognized in the field of digital learning for innovation, and a commitment to quality and affordability.

Lumen Learning is a dynamic startup that prioritizes comprehensive faculty development and student affordability of their courseware. They have demonstrated a year-over-year growth of +50% in revenue for the last five years and continue to gain traction in the market, with minority-serving institutions as 28% of their customer base. With Lumen, we see a unique opportunity to help shape and test how they entwine their robust faculty professional development platform focused on evidence-based teaching practices (Lumen Circles) with their student-facing personalized learning platform (Waymaker). We believe the successful integration of these two offerings can yield important new insights and learnings about high quality courseware implementation paired with faculty professional development.

Arizona State University and Carnegie Mellon University represent a partnership of two leading research universities focused on equity centered research and development. We saw an opportunity to build on the Open Learning Initiative’s (OLI) next generation open-source courseware technology (Torus) and adaptive learning capabilities, which leverages a decade plus of research in cognitive and learning science, computer engineering, and human-computer interaction. We also saw a unique opportunity to leverage ASU’s scale (both in its own universe of 150K+ learners as well as its robust network of partnerships and collaborations) and its ability to test and refine the product in an institutional context. ASU also brings considerable expertise in the development and implementation of adaptive learning, creation of interactive simulations, and faster, more agile research, which will enable more rapid user-aligned iterative improvement of the OLI platform.

### Why did the foundation partner with Macmillan Learning?

We are partnering with Macmillan Learning to research and test equity-centered enhancements to their learning-science informed courseware products in Introduction to Psychology and Introduction to Sociology classes. Macmillan Learning is a privately held, family owned educational publisher and developer of ACHIEVE™ - an innovative new teaching and learning platform developed based on extensive learning science and student user research.

Achieve is the first product exclusively designed for higher education to earn the “Research-Based Design” product certification by Digital Promise. As such, Macmillan Learning is uniquely positioned to test and iterate equity-centered enhancements and evidence-based teaching practices on their existing courseware products and help us learn how to design courseware to best support student metacognition and sense of belonging. Building on Macmillan Learning’s ongoing research on student success in Achieve, this new research project will undertake additional rigorous product and implementation research on courseware developed for Introduction to Psychology and Introduction to Sociology courses, and potentially extend to courseware for Freshman Composition courses.

We are excited to partner with Macmillan Learning given our shared vision of research-informed courseware innovation designed to improve outcomes for our focus student populations. Through this partnership, we hope to work together to discover how to develop highly effective courseware that promotes student success through their college experience.

### **What is the Statistics Courseware Exemplar Measurement, Learning, and Evaluation (MLE) Plan?**

The **funded exemplar research plan** for Statistics directly addresses the limited causal research conducted to-date on courseware, teaching practices, and implementation support. By conducting **efficacy research** on the exemplar statistics courseware, we will learn in late 2025-2026 the causal impacts of the courseware product when implemented with recommended teaching practices and implementation support on student learning and course success rate. In early 2024-2025, we will learn the essential conditions and supports that correlate with improved course completion from **implementation research** studies. To increase the likelihood of positive impact in these trials we have funded **rapid-cycle user research**. Through these studies we will learn in 2023-2024 what factors increase usage and engagement with the courseware platform. In summary, this plan will test our hypothesis that a courseware product (developed through formative research with our priority populations, that enables teaching practices, and is implemented with support) can improve course outcomes.

### **How does the digital learning and courseware work connect with other parts of the Postsecondary Success strategy?**

The Postsecondary Success goal is to **improve student outcomes and close opportunity gaps for Black, Latino, Indigenous students, and students from low-income backgrounds**, ensuring that race, ethnicity, and income are not predictors of postsecondary success.

To achieve this outcome, the PS strategy focuses on institutional transformation, as institutions must be the unit of change in eliminating systemic structural and cultural barriers that contribute to inequitable outcomes. By investing in the integration of evidence-based teaching and learning solutions like innovative digital learning technologies combined with high impact instructional practices, and institutional supports that create inclusive and coherent learning environments for students, institutions can improve outcomes at key loss and momentum points for students on their academic journey. In addition to digital learning, the PS Solutions team also invests in Developmental Education reform and Advising reform as they play complementary roles and involve deep institutional capacity-building that spans the student journey from matriculation to transfer and graduation. By focusing on these three Solution areas, we expect to maximize the likelihood of success for our priority student populations by improving key performance indicators including gateway course completion, 1st-year credit accumulation, first-year retention rate, and student ROI.

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