

2022

TIME FOR CLASS

THE STATE OF DIGITAL LEARNING
AND COURSEWARE ADOPTION



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EXECUTIVE SUMMARY

Since 2014, Tyton Partners has monitored the dynamics of the higher education instructional materials and digital learning market to understand the needs of instructors, institutions, and students and to monitor how suppliers are evolving to meet those needs. This 2022 summary provides an updated view of how the pandemic has altered the landscape of teaching, learning, and course materials in higher education. This report examines how faculty and institutional leaders are using instructional materials to implement teaching practices that can improve student learning and outcomes, especially for students historically underserved by higher education. This report focuses on introductory courses, including gateway courses, which are a “major accelerant of the DFWI rate¹ and serve as a significant barrier to long-term college completion and success.”² Black, Latinx, and Indigenous students and students from low-income backgrounds are disproportionately impacted by the high DFWI rate in gateway courses when compared to their peers. This report reviews how digital learning in high-enrollment introductory courses can enable instructors to incorporate evidence-based teaching practices and work to close equity gaps in courses.

Informing this research are survey responses from approximately 850 administrators and 3,200 faculty at 1,200 unique postsecondary institutions and interviews with over 15 instructional materials and digital learning providers. About 2,200 of our faculty respondents teach introductory-level courses; the report focuses on these instructors because of their role in developing and delivering courses that reach large numbers of students and influence student retention and progression.

Most of our respondents report using digital learning tools to support teaching and learning in their courses. Digital tools such as courseware generally enable faculty to implement teaching practices associated with greater student learning. However, only 45% of the faculty respondents report that they receive sufficient support in selecting, implementing, or using courseware, indicating opportunities for suppliers and institutions to improve faculty support.

In this context, this paper addresses the following critical questions to expose information so that providers of course tools and materials can better serve faculty, students, and institutions.

- What unique challenges do faculty teaching introductory-level courses face, and what tools and teaching practices are they adopting in the classroom to achieve equitable outcomes?
- What role can high-quality digital learning tools play in supporting instructors and students in achieving more equitable outcomes?
- How can institutions and suppliers work together to support the implementation of high-quality digital learning approaches that help achieve equitable outcomes?

1. “The percentage of students in a course or program who get a D or F grade, withdraw (‘W’) from a course, or whose progress in the course is recorded as incomplete (‘I’)”

2. Kwak, J. (2020, November). Concerned with Equity in Higher Ed? Start with the DFWI Rate. *Every Learner Everywhere*. Retrieved June 16, 2022, from <https://www.everylearnereverywhere.org/blog/equity-and-dfwi-rate-or-dfw-rate>

KEY TERMS

THROUGHOUT THIS REPORT, WE USE THE FOLLOWING DEFINITIONS:

TERMS	DEFINITIONS
Digital learning	The use of technology and teaching practices enabled by digital tools to enhance learning. It includes a broad range of content and communication tools, curricular models, design strategies, and student support services that personalize instruction for students in face-to-face, blended, hybrid, and online learning environments. Equitable digital learning adapts instruction to students' needs. Implemented well, digital learning can enable active learning, empowering instructors with data to inform teaching and create better student outcomes.
DFWI rate	The DFWI rate is the percentage of students in a program who get a D or F grade, withdraw ("W") from a course, or who receives an incomplete. In this document we refer both to the DFWI and the DFW rates, as institutions decide which of these rates are most relevant to their context. The DFW rate omits the "I" from the calculation. By disaggregating the DFW/DFWI rates, institutions can review whether they have equity gaps in student success.
High vs. Low Pell institutions	Federal Pell Grants usually are awarded only to undergraduate students who display exceptional financial need and have not earned a bachelor's, graduate, or professional degree. Schools use the information on the Free Application for Federal Student Aid (FAFSA®) form to determine a student's eligibility for a Pell Grant, and if so, how much the student is eligible to receive. ³ This is one available measure that is used to identify students coming from low-income backgrounds. Throughout this report, the High Pell institutions are defined as those that have 60% or more of their undergraduate student population receiving Pell Grants and Low Pell less than 20%.
Blended learning	A course modality where faculty use instructional technology such as courseware to blend online and face-to-face components, reducing lecture time to enable active learning.

3. <https://studentaid.gov/understand-aid/types/grants/pell>

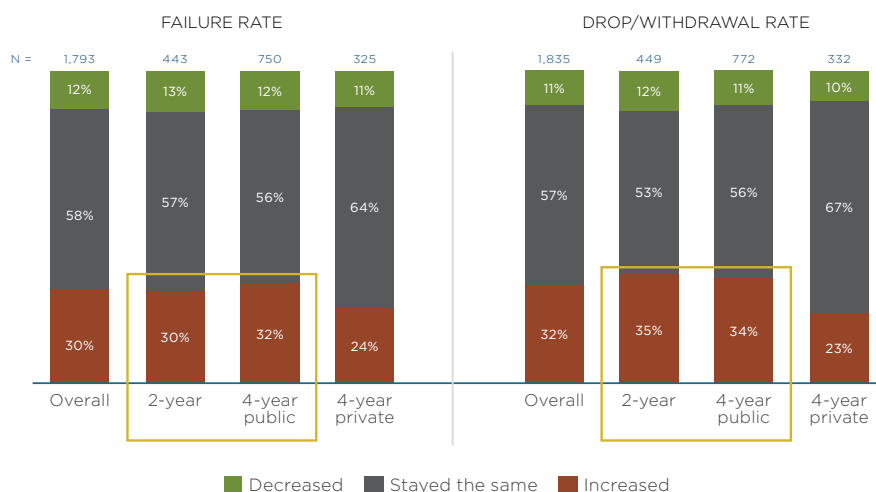
THE STUDENT AND FACULTY EXPERIENCE IN INTRODUCTORY-LEVEL COURSES

THE STUDENT EXPERIENCE

High-enrollment, introductory-level courses are intended to serve as **gateways** to degree paths but often function as **gatekeepers**. High failure rates in these gateway courses lead to significant dropout numbers between students' first and second years.⁴ These drops are historically larger when disaggregated by race and income—students identifying as Black, Latinx, and Indigenous experience higher DFWI rates.

This academic year, faculty report an increase in the DFWI rate compared to prior years. This increase in the DFWI rate is most often occurring at public institutions, institutions with higher proportions of students (60% or more students) eligible for a Pell Grant (High Pell institutions), and minority-serving institutions (MSIs). The increased DFWI rate reported by faculty at these institutions, which serve high numbers of Black, Latinx, and Indigenous students, and students from low-income backgrounds, indicates a widening equity gap and an urgent call to action.

IMPACT OF THE PANDEMIC ON THE DFWI RATE



Faculty teaching at institutions that serve a high rate of Pell-eligible students are more likely to report an increase in the failure rate compared to those at institutions serving lower rates of Pell-eligible students.

Faculty at MSIs are more likely to report an increase in the drop and withdrawal rate compared to those at non-MSIs (39% vs. 29%).

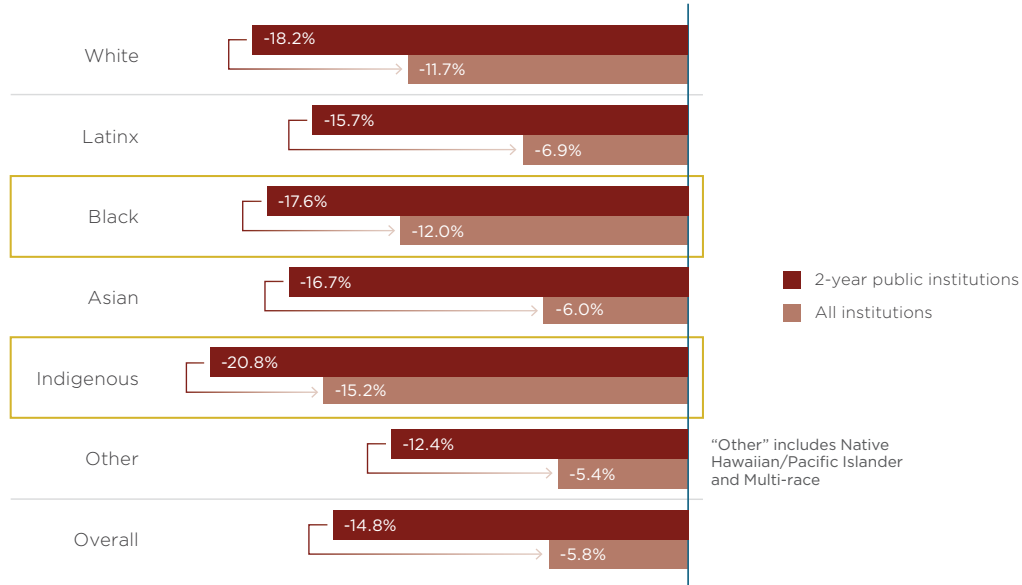
Notes: "Compared to when you have taught this course in the past, how did the percentage of students who [failed/dropped or withdrew] the class change this academic year?"

4. 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://elestage.wpengine.com/wp-content/uploads/Strategies-for-Implementing-Digital-Learning-Infrastructure-to-Support-Equitable-Outcomes-ACC-FINAL-1.pdf>

The increased DFWI rate is concerning when coupled with the continued decline in student enrollment. Public four-year institutions lost the largest number of students (251,400 or -3.8%) in the Fall of 2021 compared to the previous year. Public two-year colleges remain the hardest-hit sector since the start of the pandemic (-13.2% or 706,100 students over 2019).⁵ Among all racial groups, Black and Indigenous students experienced the steepest enrollment decline, as seen in the figure below.

ENROLLMENT DECLINES FROM FALL 2019 TO FALL 2021,

BY STUDENT DEMOGRAPHICS AND INSTITUTION TYPE



Enrollment declines have been steepest at public 2-year institutions.

Nationally, Indigenous students and Black students experienced the steepest enrollment decline.

Notes: Demographics reported as stated in source data

Sources: NSC Research Center: Fall 2021 Enrollment Update (As of October 2021)

5. National Student Clearinghouse Research Center. (2021). Overview: Fall 2021 Enrollment Estimates. *Current Term Enrollment Estimates Report Series*. https://nscresearchcenter.org/wp-content/uploads/CTEE_Report_Fall_2021.pdf

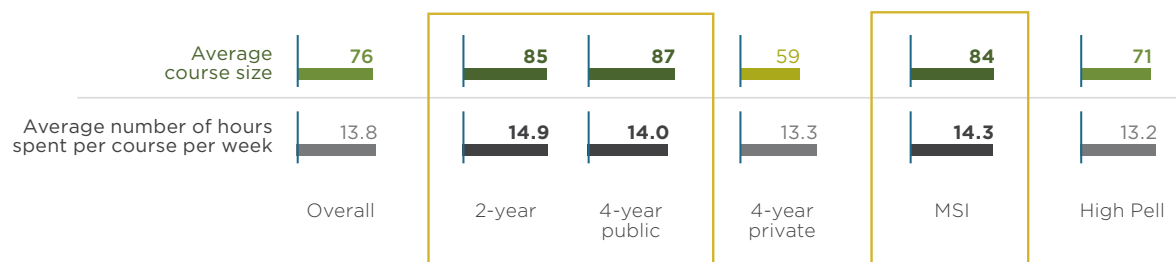
THE FACULTY EXPERIENCE

FACULTY BURNOUT

Given the context of continued and exacerbated challenges to student access and success—which are disproportionately felt based on race and income—it is essential to understand and support faculty as they work to support effective and equitable teaching and learning. Relative to their peers teaching upper-level courses, faculty teaching introductory courses are more likely to be part-time, adjunct, and non-tenured. Regarding workload, 70% of faculty teaching introductory courses teach an average of three or more courses per term. The workload and experience of faculty teaching introductory courses differ by institution type, with faculty at two-year and public four-year institutions, MSIs, and High Pell institutions reporting larger class sizes and more time spent per course. In addition, the experience of instructors based on their race is not the same, and research done throughout the pandemic suggests that the burdens of supporting students are not equally shared across institutional types and faculty identities. Research suggests that women of color are an especially burdened faculty group.⁶

CLASS SIZE OF FACULTY TEACHING INTRODUCTORY COURSES,

BY INSTITUTIONAL CHARACTERISTICS CHARACTERISTICS

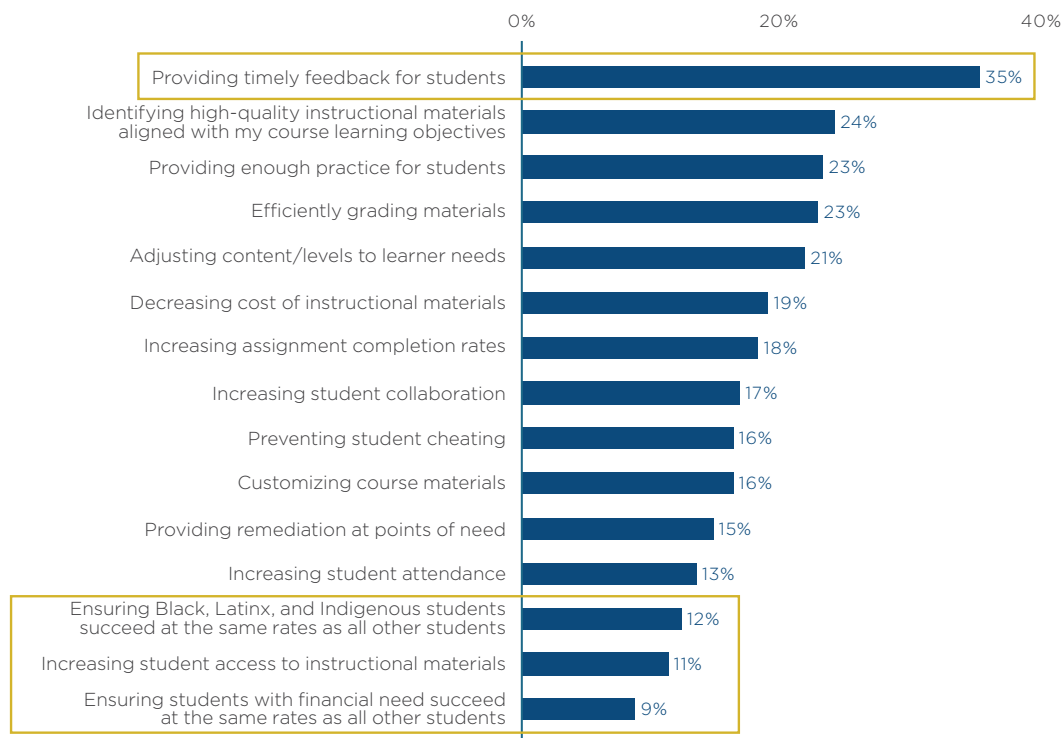


Notes: "How many students are enrolled in the introductory course in which you are using or have used courseware? Please select the option closest to the total enrollment in that course." Overall N = 1,944, 2-year N = 485, 4-year public N = 817, 4-year private N = 343, MSI N = 529, High Pell N = 56

6. Supiano, B. (2022, May 31). The Uneven Burden of Identity. *The Chronicle of Higher Education*. <https://www.chronicle.com/article/the-uneven-burden-of-identity>

The most common instructional challenge that faculty report is providing students with timely feedback. However, challenges vary by factors such as institution type and faculty discipline. Faculty teaching introductory courses at two-year institutions are more concerned with increasing assignment completion (28%) and preventing cheating (21%) than their peers at four-year institutions. Faculty teaching introductory courses in natural science are most often concerned with identifying high-quality course materials (29%) and providing sufficient practice (38%) compared with those in other disciplines.

INSTRUCTIONAL CHALLENGES



Notes: "Which instructional challenges are top priorities for you to address in this course? Please choose up to three." N = 2,046

Faculty anticipate that their job will be more technology-driven in the near future, as they work to address these instructional challenges.⁷ In a recent survey by College Innovation Network, "89% of faculty agree that they will spend more time supporting students online," and "88% of faculty agree that they will be using more EdTech tools in class in the near future."⁸ They caution "that the technology has to be accessible to students." In the same survey, 88% and 86% of faculty report that it is very or extremely important that the technology is "accessible to students with disabilities and to underserved students, respectively."⁹

7. College Innovation Network (2022, May). Faculty as EdTech Innovators: Moving Beyond Stereotypes to Promote Institutional Change. CIN EdTech Survey Series. https://wgulabs.org/wp-content/uploads/2022/05/2022-05_EdTech-Faculty-Survey-Report-Full.pdf

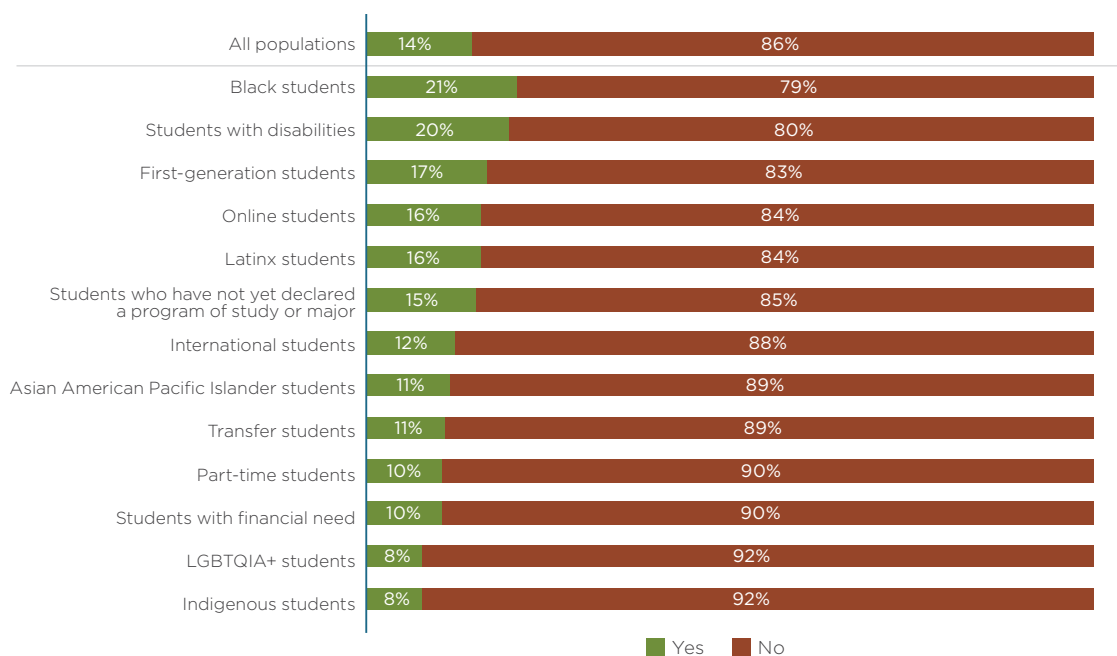
8. Ibid.

9. Ibid.

ACCESS TO AND USE OF STUDENT DATA

Disaggregating data about the performance of student populations to improve teaching and learning practice and policy is an essential tool; it helps identify places where institutions need to improve outcomes based on race and income. However, only a small portion of faculty report having access to student demographic data or information on whether students identify with specific populations. Two-year institutions are slightly better (18%) at providing faculty with access to data on all populations when compared to private four-year institutions (11%) and public four-year institutions (15%). Relative to the 70% of advisors who report having access to student demographic data¹⁰, faculty report significantly lower rates of access.

ACCESS TO DATA ON WHETHER STUDENTS IDENTIFY WITH CERTAIN POPULATIONS



Notes: "Do you have access to data about whether students in your courses identify with these populations? Please select all student populations you can access data on." N = 1,959

Faculty have limited access to disaggregated student demographic data. This is an impediment to faculty reflection on where and how to adjust instruction in service of ensuring students can all be successful. For example, given access to disaggregated student data, faculty can compare data among subgroups and individual data to course data to identify differences in student outcomes. Students who are older or working may have challenges coming to office hours during standard business hours or meeting synchronously for group work. Transfer students may have less familiarity with institutional support resources and benefit from more transparency there, as well as activities that create a sense of belonging in the course and at the institution. Understanding the needs of students based on their demographics and lived experiences is a critical tool for faculty who are seeking to center equity in their teaching.

One caveat: As detailed in ELE's *Learning Analytics Strategy Toolkit*, some data-informed decisions can intentionally or unintentionally result in actions that reinforce biases. This tool is a helpful conversation starter for institutional leaders, faculty, and suppliers regarding the ethical use of learning data to drive equitable practice.

10. Shaw, C., Bharadwaj, P., Bryant, G., Smith, S., Nguyen, A., (2022, June). Driving Toward a Degree - 2022. Tyton Partners.

THE USE OF DIGITAL MATERIALS IN INTRODUCTORY COURSES

KEY DEFINITIONS OF DIGITAL INSTRUCTIONAL MATERIALS

Courseware: Courseware is instructional content that is scoped and sequenced to support delivery of an entire course through software that is built specifically for education purposes. Cengage MindTap, Lumen Waymaker, McGraw Hill Connect, and Pearson MyLab are all examples of courseware products, but sources for short content like YouTube are not considered courseware. Courseware includes assessment to inform personalization of instruction and is equipped for adoption across a range of institutional types and learning environments. Courseware is not your learning management system (LMS).

E-texts: E-texts are electronic versions of printed materials that can be read on a computer or handheld device. Typically, e-texts may allow students to add notes and access media, but they do not include adaptive components.

Advanced e-text: An emerging category of e-text, which has integrated assessments that allow for check-for-understanding quizzes and other basic interactive functionalities.

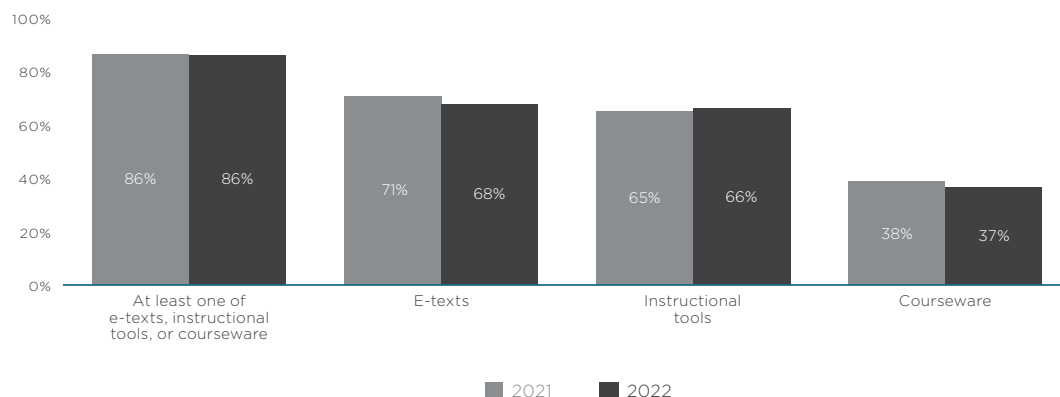
Open Educational Resources (OER): OER is defined as “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others.” Unlike traditionally copyrighted material, these resources are available for “open” use, which means users can edit, modify, customize, and share them. Examples: OpenStax, Lumen Learning.

Instructional tools: Supplementary digital tools that enhance learning through incorporating social learning, classroom engagement, assessment, and/or analytics. Examples: Kahoot!, iClicker, Zoom, ProctorU.

ADOPTION

Most faculty (86%) use at least one digital tool in their course(s), whether it is an e-text, instructional tool, or courseware. Adoption varies across institution types and faculty teaching introductory courses at MSIs are more likely to use e-texts (68%) and instructional tools (68%) compared to those at non-MSIs (66% and 65%, respectively). Faculty at High Pell institutions are also more likely to adopt e-texts (71%) than those at Low Pell institutions¹¹ (63%).

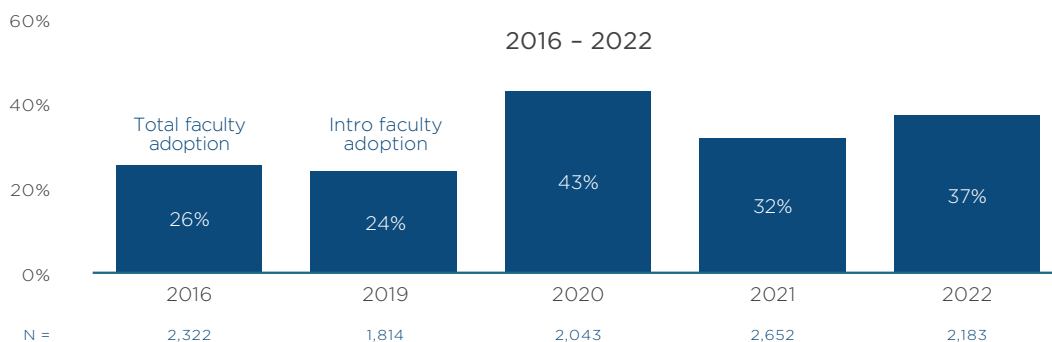
ADOPTION OF DIGITAL TOOLS



Notes: "Please describe your level of awareness with and usage of the following: E-Texts, Instructional Tools, Courseware." N = 2,183

Thirty-seven percent of faculty teaching introductory courses indicated that they use courseware this year. While adoption has risen compared to 26% in 2016, adoption rates have plateaued since 2020. The use of courseware varies by discipline and institution type, with greater adoption rates at institutions serving higher rates of Black, Latinx, and Indigenous students and students from low-income backgrounds. Faculty use of courseware is higher at two-year institutions (46%) and MSIs (40%) compared to four-year institutions (36%) and non-MSIs (36%). Faculty teaching math and computer science are also more likely to use courseware (65%) compared to those teaching humanities and social science (28%) and natural and physical science (42%) courses.

ADOPTION: CURRENT USE OF COURSEWARE



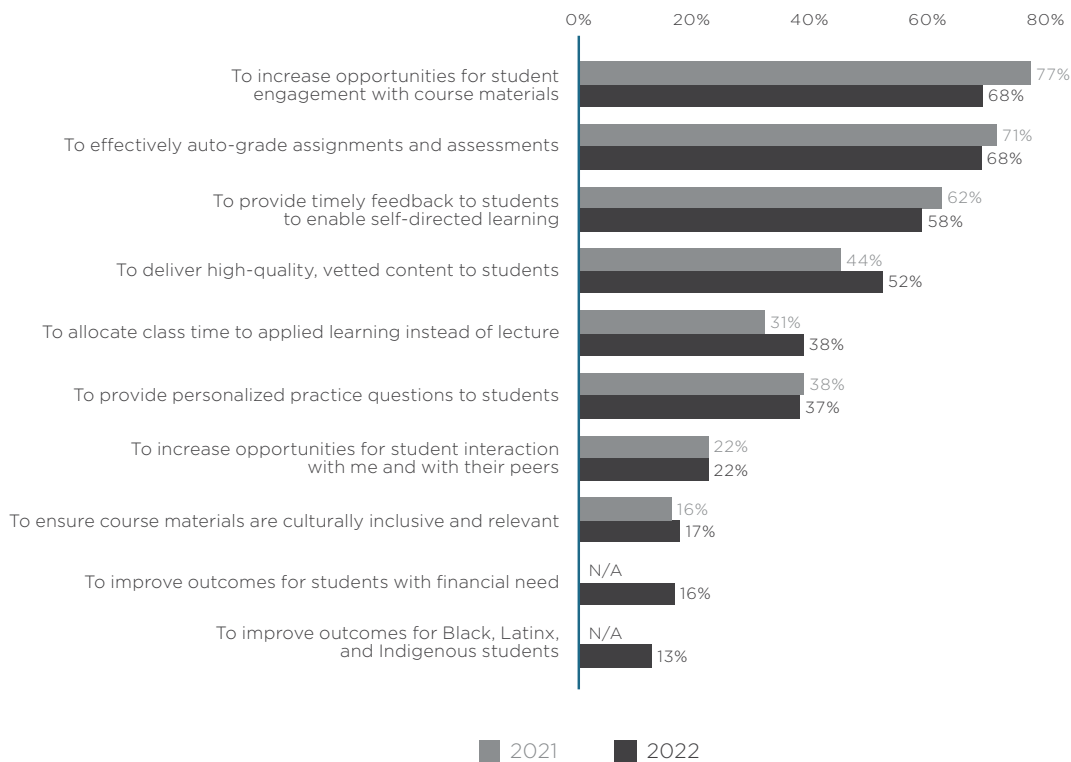
Notes: 2016 question: "Are you familiar with the term courseware?" 2019 and 2020 question: "Please describe your level of awareness with the following: Courseware." 2021 and 2022 question: "Please describe your level of awareness with and usage of the following: Courseware."

11. Institutions where less than 20% of students are eligible for a Pell Grant

In terms of growth in adoption, faculty report that they expect to increase adoption of OER and instructional tools at the highest rate across all tools: 40% of faculty report they will start to use or increase the use of OER, and 31% for instructional tools. Faculty say they plan to increase adoption of e-text and courseware at slightly lower rates, with only 24% and 15% expecting increased or new adoption, respectively. Courseware adoption rates and future plans vary by discipline, with faculty teaching economics and math and computer science more likely to indicate they plan to increase the use of courseware compared with faculty teaching humanities and natural science.

When we look at the evolving use of courseware, we observe some specific use patterns. Faculty use courseware to increase student engagement, auto-grade, and provide timely feedback. These use cases are consistent across institution types, disciplines, and faculty characteristics. Top features used within courseware products also align with top use cases. The top features faculty teaching introductory courses use in their class include auto-grading, LMS/SIS integration, and practice questions with instant feedback.

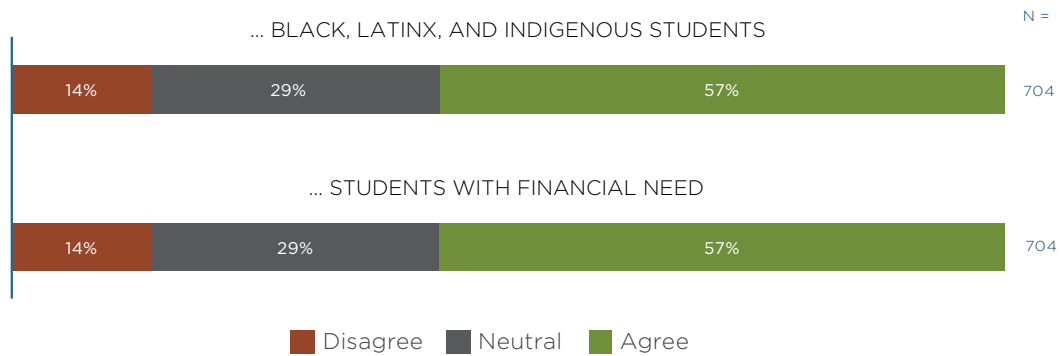
COURSEWARE USE CASES



Notes: "How do you use courseware in the course? Please select all that apply." N = 799

As demonstrated by the use cases indicated in the prior chart, less than a quarter of faculty report using courseware primarily to ensure course materials are culturally inclusive or improve outcomes for Black, Latinx, and Indigenous students and students from low-income backgrounds. However, while this is not the primary use case, the majority of faculty who use courseware believe that courseware can advance academic performance for Black, Latinx, and Indigenous students (57%) and students from low-income backgrounds (57%).

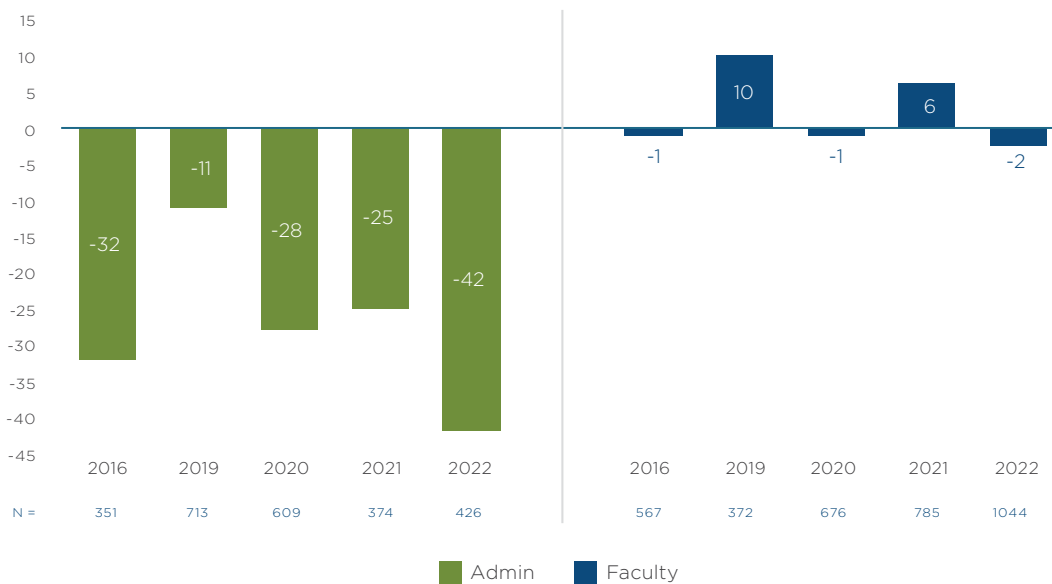
BELIEF THAT COURSEWARE CAN ADVANCE ACADEMIC PERFORMANCE FOR...



Notes: "Please place yourself along the spectrum below with regard to your perspective on the potential of courseware to improve academic performance for Black, Latinx, and Indigenous students."

User satisfaction with courseware continues to be low, with faculty giving it a net promoter score (NPS)¹² of -2 and academic administrators giving it -42. Several factors influence NPS. Institution type plays an important role: faculty at two-year institutions give courseware an NPS of 16 compared to -11 at four-year institutions. Certain use cases (e.g., faculty intentionally using courseware to improve academic outcomes for students), institutional environment (e.g., institution achieving an ideal digital learning environment), and faculty preferences (e.g., preference for using third-party content over developing own content) also positively influence NPS.

COURSEWARE NPS AMONG ADMINISTRATORS AND CURRENT FACULTY USERS

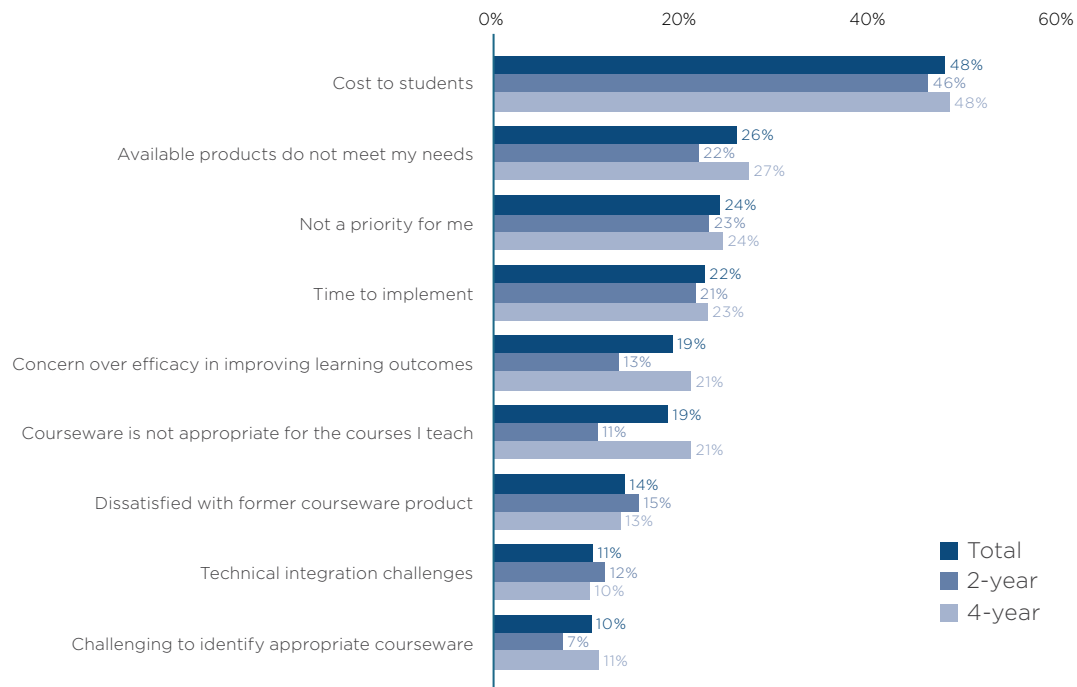


Notes: "How likely are you to recommend this courseware to a colleague?"

12. NPS is a metric for assessing customer loyalty and satisfaction for a company's brand, product or services. NPS can range from -100 to 100.

In addition to the unsatisfactory user experience, cost is a significant barrier to courseware adoption. Faculty not currently using courseware report that the cost to students is the number one reason for non-adoption. A perception of low availability of products that meet faculty needs and the time required to implement are additional, though less frequently selected, reasons why faculty are not using courseware.

TOP REASONS FOR NOT USING COURSEWARE



Faculty at minority-serving institutions (MSIs) are more likely to cite cost to students as a reason for not using courseware (54%).

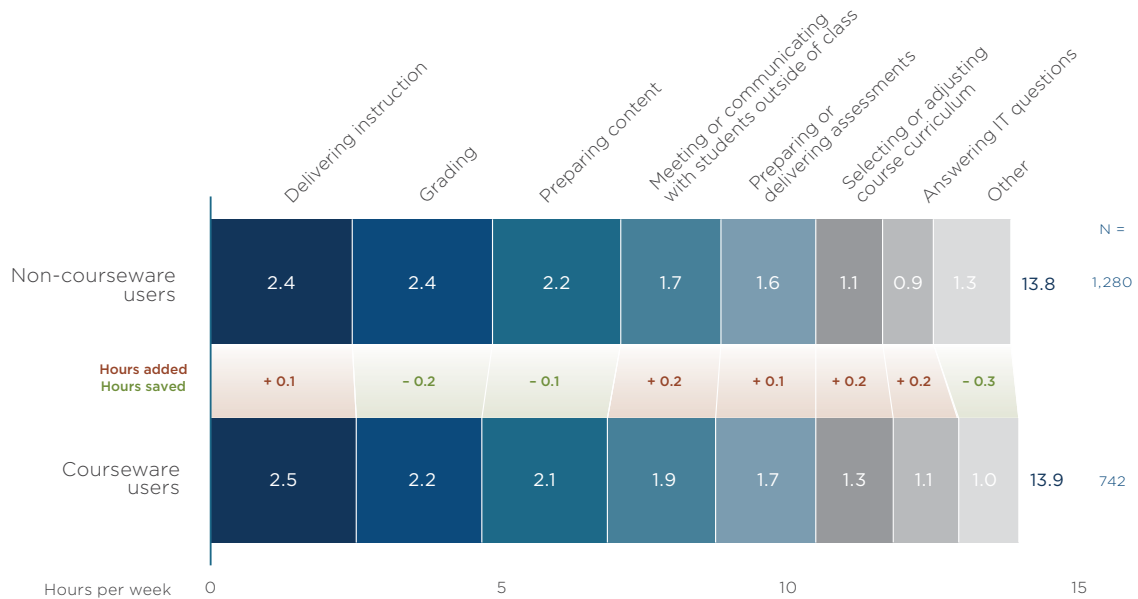
Notes: "Which answers below best match why you are not currently using courseware? Please choose up to three." Showing data for answer choices that were selected by >10% of faculty among faculty that are non-courseware users, N = 1,687

IMPACT

Self-reported information on faculty time use indicates that when implemented well, digital tools such as courseware demonstrate the potential to transform how faculty use their time and enable the incorporation of active learning and other evidence-based teaching practices. Respondents indicate that courseware helps them save time on grading and preparing content. Notably, faculty spend more time adjusting the curriculum and answering IT questions.

WEEKLY DISTRIBUTION OF TIME SPENT BY FACULTY TEACHING INTRODUCTORY COURSES,

BY COURSEWARE USAGE



Notes: "In a typical week during this current term, how much time do you spend, on average, on your highest enrollment course?" "On average, how many hours do you allocate each week for each of the following activities in this course?" "Other" consists of mostly administrative tasks like emails and scheduling

Instructors shared feedback about the challenges of using and implementing digital courseware. In particular, their commentary about challenges provides insight into why some of the items above (e.g., adjusting the curriculum, answering IT questions) can take more time. Challenges in customizing tools and a lack of support in implementing new tools are among those most frequently cited faculty challenges.

"[The challenge is to be] able to easily edit questions/exercises/problems created within the courseware; [my advice is to create] what I call a "Course in a Box" concept that is provided by the courseware but can be customized by an instructor [who can] add instructor prepared videos/learning materials."

- Faculty teaching introductory accounting course, 2-year institution

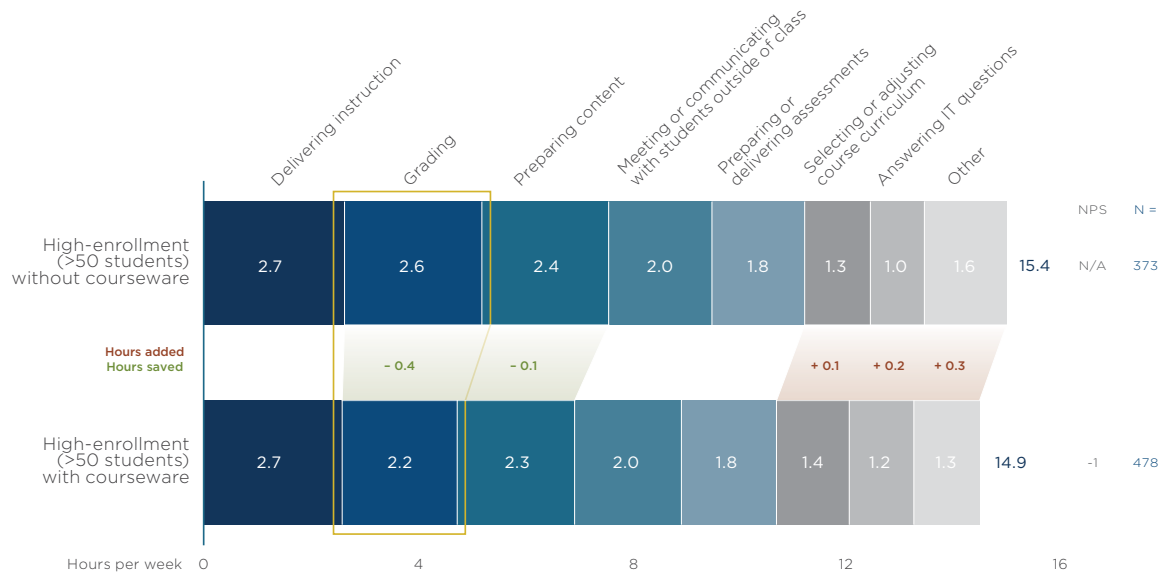
"The gap for me is the [lack of] support when I cannot address a technological issue on my own. My experience has been that it takes far too long to connect with a human to solve problems. With no solution to the problem, I move on with or without the planned use of the product."

- Faculty teaching introductory sociology course, 4-year private institution

One way to mitigate courseware’s impact on increasing time spent on IT issues is to provide access to high-quality implementation and ongoing tech support for students and faculty. Currently, only 45% of faculty report having access to robust implementation support while using courseware.

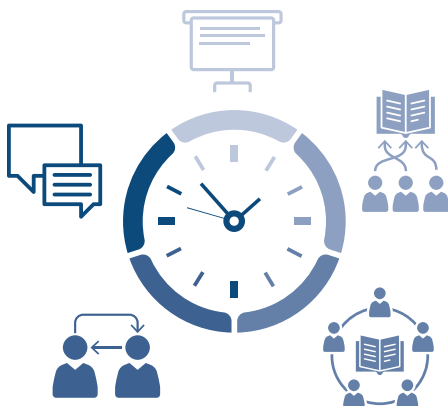
Courseware shows modest potential to save time in high-enrollment courses. Faculty using courseware in high-enrollment (with more than 50 students) introductory courses report spending 0.5 hours less per course than their peers who are not using courseware. The courseware users save the most time on grading, where they save on average 0.4 hours.

WEEKLY DISTRIBUTION OF TIME SPENT BY FACULTY TEACHING HIGH-ENROLLMENT INTRODUCTORY CLASSES, BY COURSEWARE USAGE



Notes: “In a typical week during this current term, how much time do you spend, on average, on your highest enrollment course?” “On average, how many hours do you allocate each week for each of the following activities in this course?” “Other” consists of mostly administrative tasks like emails and scheduling

Among the faculty teaching introductory courses using courseware, a subset (21%) can be defined as *blenders*, those who use the courseware to blend online and face-to-face components, reducing lecture time to enable active learning.

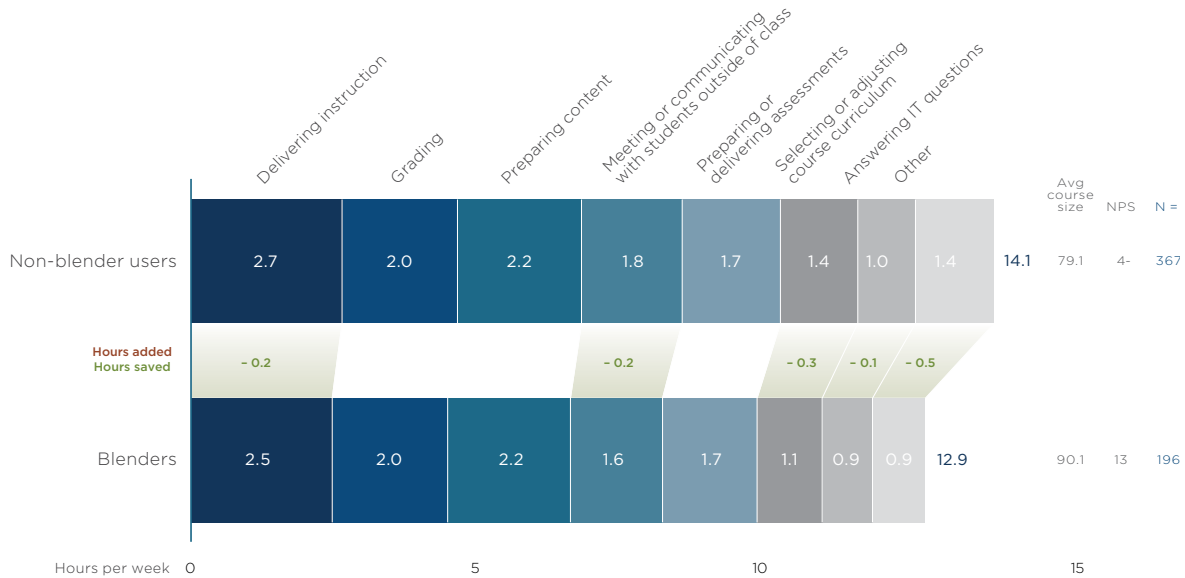


“BLENDERS”

- Twenty-one percent of faculty teaching introductory courses who are using courseware
- These faculty use courseware to blend online and face-to-face components and enable active learning

Blenders save time (1.2 hours/week) compared to the other faculty teaching introductory courses and using courseware. Blenders also report a higher NPS and better perception of positive student outcomes for courseware relative to other user segments. Blenders save significant time on selecting and adjusting the course curriculum (0.3 hours of savings) and *other* activities (0.5 hours of savings), mostly comprised of administrative tasks such as emailing and scheduling.





WEEKLY DISTRIBUTION OF TIME SPENT BY FACULTY TEACHING INTRODUCTORY COURSES AND USING COURSEWARE, BY COURSEWARE USE CASE





Notes: "In a typical week during this current term, how much time do you spend, on average, on your highest enrollment course?" "On average, how many hours do you allocate each week for each of the following activities in this course?" "Other" consists of mostly administrative tasks like emails and scheduling

EVIDENCE-BASED TEACHING PRACTICES

Evidence-based teaching (EBT) practices are a set of approaches that can be implemented to support greater student learning. Faculty can deploy these practices in online, hybrid, and face-to-face courses. We explore six categories of teaching practices that demonstrate emerging results to improve learning gains for students. Digital tools can be used to enable many of these practices in equity-centered ways that support student learning, progress and course completion.

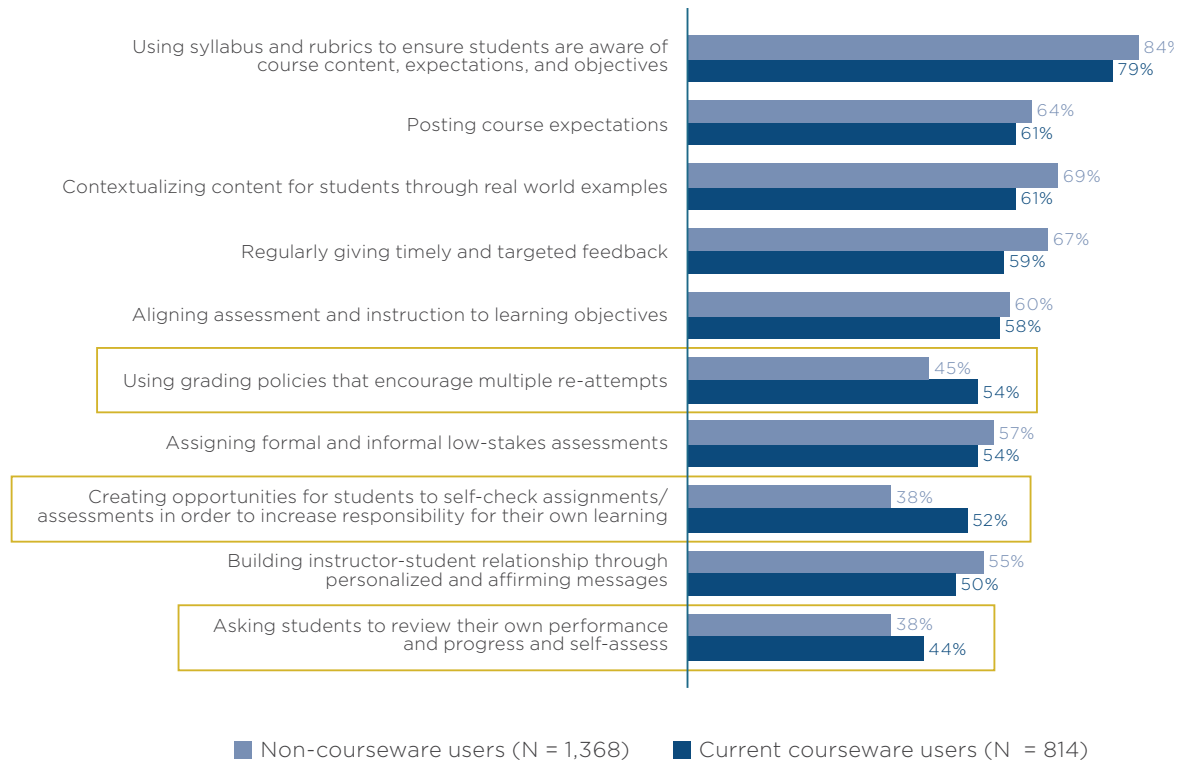
	CATEGORY	SPECIFIC PRACTICES
	Transparency and outcomes-driven instruction - Providing students with a clear overview of the course content, learning outcomes, and assessment criteria	<ul style="list-style-type: none"> Using syllabus, rubrics, and other mechanisms to ensure students are aware of course content, grading expectations, and learning objectives to reach mastery Regularly specifying learning objectives and reviewing student performance versus those learning objectives Aligning assessment and instruction to learning objectives Regularly making interventions based on learning objective performance
	Active learning pedagogy - Engaging students in “learning by doing”	<ul style="list-style-type: none"> Contextualizing content for students through real-world examples or project-based learning Assigning pre-class activities and/or using in-class voting and using results to adjust class Using in-class voting, simulations, and/or animations to engage students and capture real-time data Differentiating instruction based on student need Flipping class to peer instruction to drive discussion and inquiry-based learning
	Formative practice - Creating opportunities for students to practice skills in ways that provide timely and targeted feedback to nudge them towards mastery	<ul style="list-style-type: none"> Assigning formal and informal low-stakes assessments and practice opportunities regularly Regularly giving timely and targeted feedback on student and class performance Seeking feedback from working students on suitability of assignments and schedule Adjusting instruction in class and making interventions based on formative performance Using adaptive learning tool(s) that respond to student performance Creating opportunities for students to self-check assignments/assessments in order to increase responsibility for their own learning
	Data-driven instruction and intervention - Informing teaching and ongoing course improvements to optimize student success	<ul style="list-style-type: none"> Regularly adjusting instruction based on class performance and behaviors Regularly making targeted interventions based on individual performance Reviewing data dashboard insights before class to identify areas of challenge and adjust instruction Inviting student-support advisors to access courseware dashboard for insights

	CATEGORY	SPECIFIC PRACTICES
	<p>Meta-cognition, self-regulation, and agency - Helping students learn to be a better learner and take control of the learning process</p>	<ul style="list-style-type: none"> • Leading activities that encourage students to verbally explain their questions or reactions • Asking students to review their own performance and progress and self-assess where to practice more • Using grading policies that encourage multiple re-attempts and extra practice • Asking each student to set study plans and goals of what they want to achieve at the start of the course, and prompting them to review and adjust regularly
	<p>Sense of belonging and inclusive learning environment - Enabling all students to feel that they and their unique background have a place in the life of the classroom</p>	<ul style="list-style-type: none"> • Building instructor-student relationships through personalized and affirming messages to each student • Building student-student relationships through peer work and semester-long group activities • Contextualizing instruction and assessment content to be inclusive of the cultures and races of students in the class • Assessing prior learning to differentiate instruction • Assessing prior student experiences and situating learning in the context of their lived experiences • Posting course expectations

Faculty report that they use courseware to enable certain EBT practices. Current courseware users are more likely to encourage multiple re-attempts, have students take more responsibility for their learning, and offer more key practices related to meta-cognition. These results align with the top courseware use cases reported by faculty teaching introductory courses, which are also about increasing student engagement with materials, auto-grading assessments, and providing timely feedback to enable students' self-directed learning.

USE OF DETAILED EBT PRACTICES, BY COURSEWARE USAGE

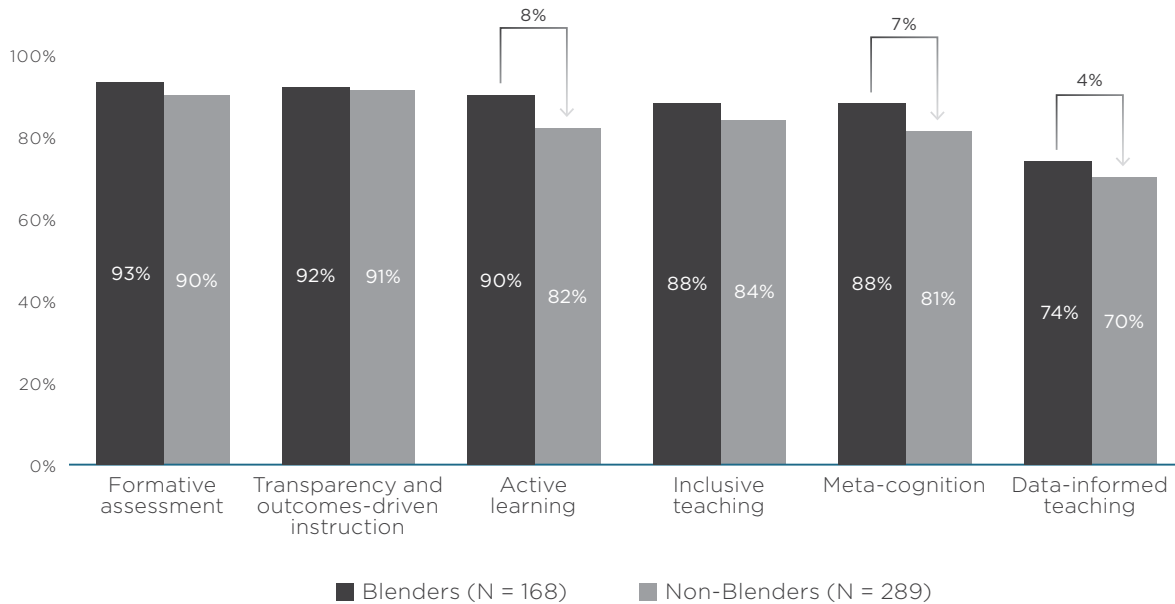
SHOWING TOP 10 SELECTED



Notes: "Are you using any of the following practices to enable [insert EBT category practice]?" "Which of the following teaching practices that you engage in, if any, are you using courseware to enable in your highest enrollment course? Please select all that apply."

Blenders (the 21% of faculty referenced earlier who use courseware to blend online and face-to-face components, reduce lecture time, and enable active learning) are more likely to use active learning, meta-cognition, and data-informed teaching than the *non-blenders*. These faculty use courseware to reduce lecture time and, in turn, engage students in “learning by doing” (active learning), encourage students to direct their learning (meta-cognition), and monitor learning data to adjust teaching (data-informed teaching).

USE OF EBT CATEGORY PRACTICES, BY COURSEWARE USE CASE

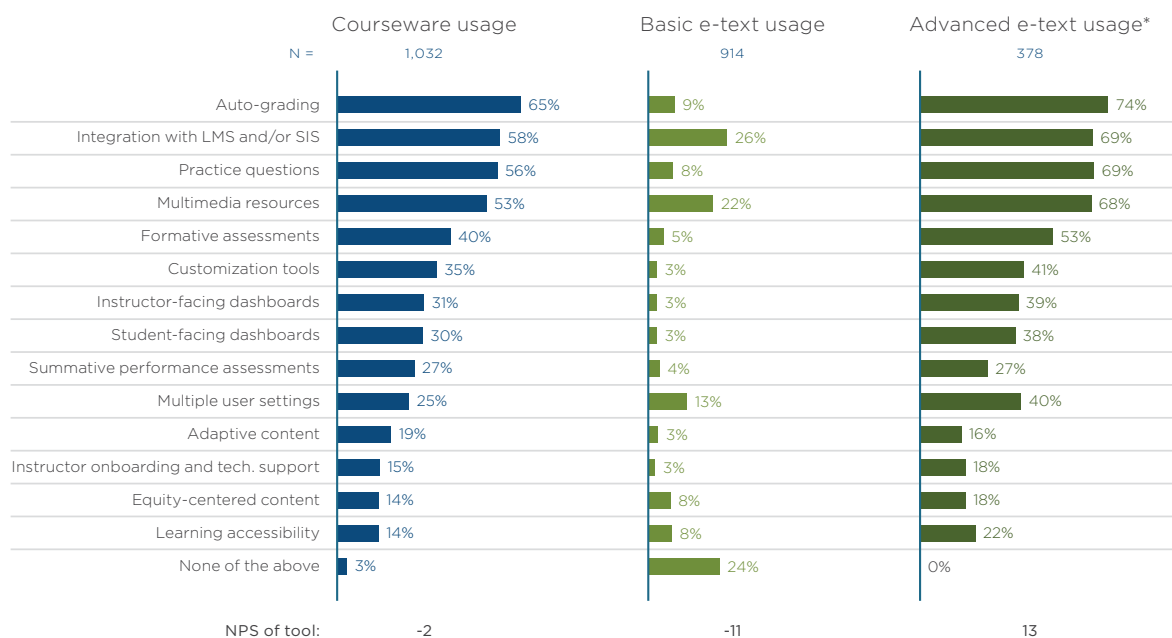


Notes: “Are you using any of the following practices to enable [EBT category practice]?”

ADVANCED E-TEXT: AN EMERGING CATEGORY

In looking at the extent to which digital tools enable faculty to adjust pedagogy and implement evidence-based teaching practices, we observe increased evidence that the use of e-text enables active learning and other EBTs. We are also observing a supply-side dynamic in which some e-text products in the market have shifted away from traditional static e-readers and enabled the use of selected *advanced* features such as auto-grading, enhanced LMS integration, practice questions, etc. Notable examples include publisher-led initiatives such as Cengage Infuse, which offers content packaged with auto-grading and simple course management functionality all in the LMS. Distributors are exploring this category, too. One example is VitalSource's Bookshelf CoachMe, which uses AI to automatically create check-for-understanding quizzes based on content. Faculty using these *advanced* e-text features are called *advanced e-text users* compared to *basic e-text users* in the chart below.

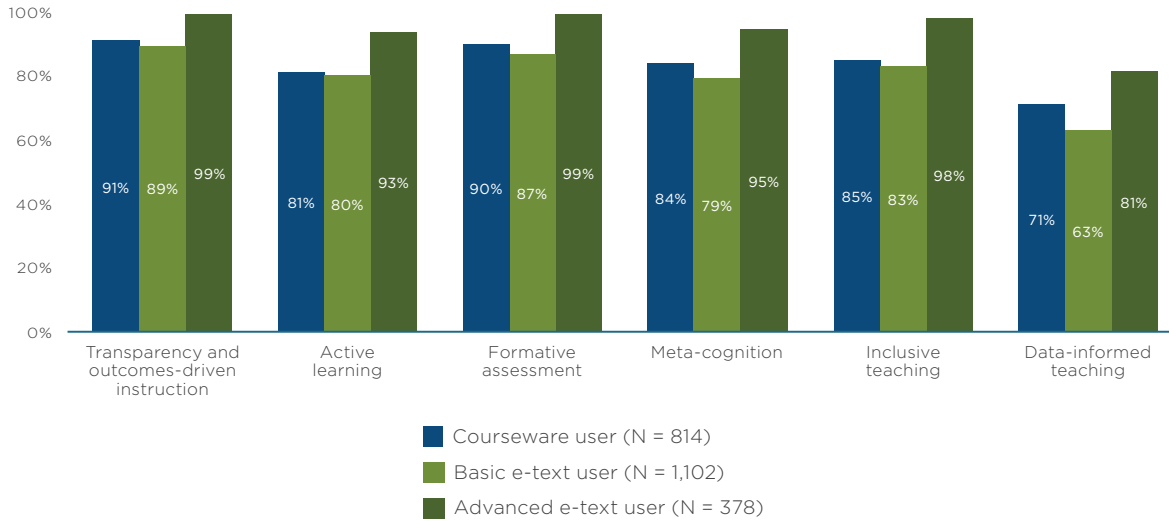
COURSEWARE AND E-TEXT FEATURES USE



Notes: *A faculty member who uses three or more e-text features among top eight most used courseware features. Survey questions: "Please select the following [courseware/e-text] features that you use in your class." Bottom six answer options and "Don't know" hidden

Faculty who are advanced e-text users are also using EBT practices at higher rates than both basic e-text users and courseware users across all six categories.

EBT ADOPTION BY COURSEWARE USAGE OR E-TEXT USAGE TYPE



Notes: "Which of the following teaching practices are you using in your highest enrollment course this term?"

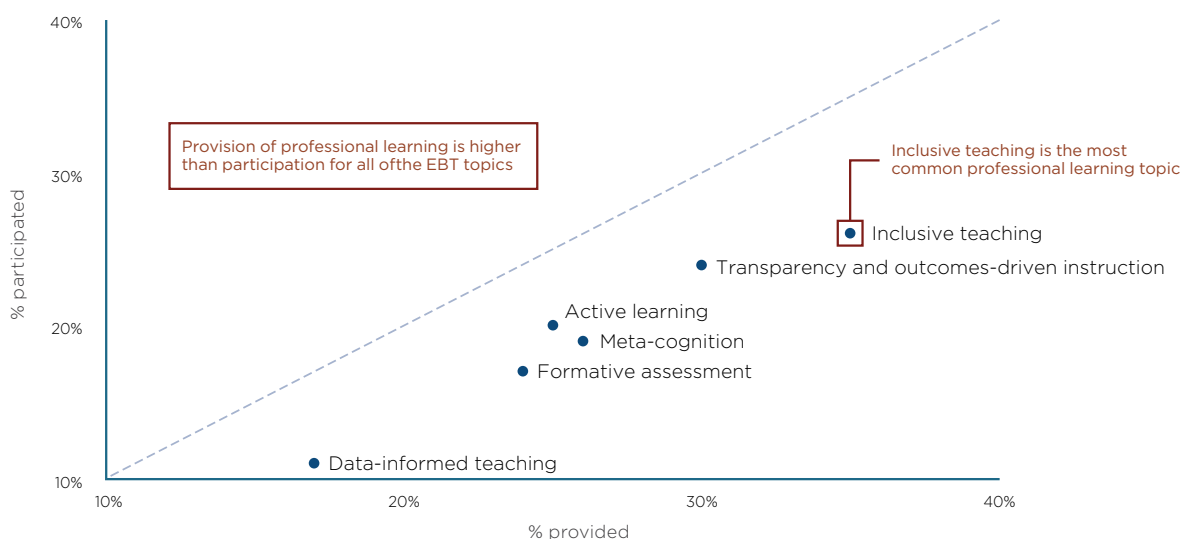
One of the appeals of e-text is the product's ease of use: e-text tools usually require less effort to implement than courseware. This ease of use, coupled with e-text's potential to enable EBT practices, provides a promising route towards enabling the adoption of digital tools that support active learning and other key teaching practices.

PROFESSIONAL LEARNING AND IMPLEMENTATION SUPPORT

Implementing new digital tools takes time and presents various challenges for instructors across institution types—whether they are adjunct or full-time. When asked about the degree to which faculty received support, only 34% report they received robust support while selecting courseware, 45% during courseware implementation, and 45% during continued use of courseware. The primary provider of this support is the suppliers who provide courseware, with 78% of faculty saying that is where they receive support during implementation. The net promoter score (NPS) for this group regarding their professional learning and support services is low at -21. This score signals an opportunity to improve the guidance for many faculty navigating selecting, implementing, and using courseware.

Faculty report low levels of support for implementing evidence-based teaching practices from their institutions as well, with less than 40% of faculty reporting they have access to professional learning across all EBTs. Among practices, inclusive teaching has the highest access rate, and data-informed teaching has the lowest. Fewer faculty members participated in these opportunities, with a participation rate below 30% across all practices.

EBT TOPICS FOR PROFESSIONAL LEARNING PROVIDED TO AND TAKEN BY FACULTY TEACHING INTRODUCTORY COURSES



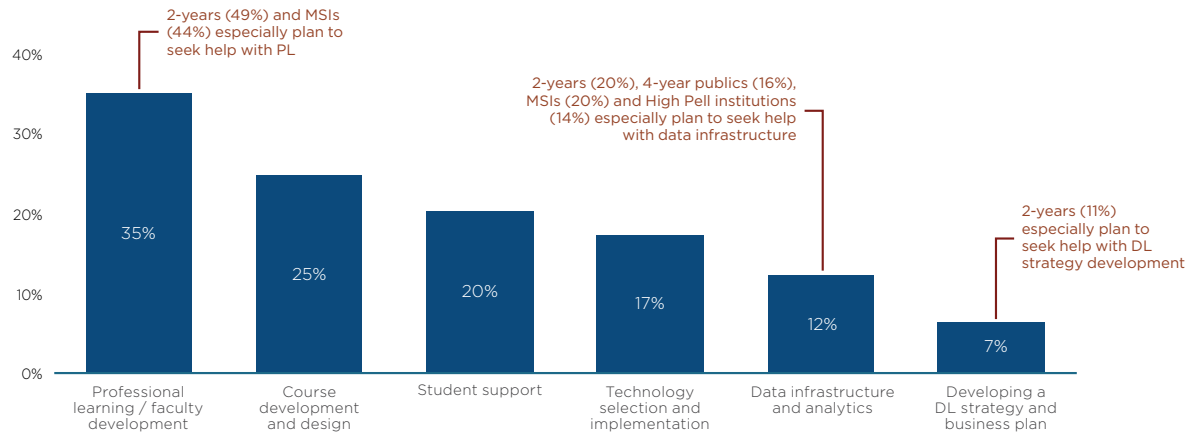
Notes: "Which of the following professional learning topics have you participated in during the last year? Please select all that apply."
 "Does your institution provide you with access to professional learning in any of the following areas? Please select all that apply."
 "Which of the following courses do you typically teach? Please select all that apply." N = 1,929

While access to support for EBTs and participation in professional learning remains low, 61% of faculty report having access to professional learning on at least one practice, and 56% report they participated in professional learning on at least one practice.

Across the board, few institutions (11%) say that their institution offers professional learning that is effective and at scale. The degree to which professional learning is offered at institutions varies by institution type. Two-year institutions (18%) and MSIs (16%) are more likely to report professional learning being effective and at scale than their four-year (10%) and non-MSI (10%) peers. These results may signal a greater commitment to supporting professional learning focused on instruction at these institutions.

Likely a response to the importance of professional learning and an acknowledgement of the limitations of institutional capacity, academic administrators identify professional learning as one of the most common areas for which they will seek external support over the next two years (35% overall). This is especially pronounced at two-year institutions (49%) and MSIs (44%). This heavier reliance on outside support may be driving part of the difference in effective-at-scale rates at these institutions.

TECHNICAL ASSISTANCE AREAS FOR WHICH ACADEMIC ADMINISTRATORS PLAN TO SEEK EXTERNAL SUPPORT IN THE NEXT TWO YEARS

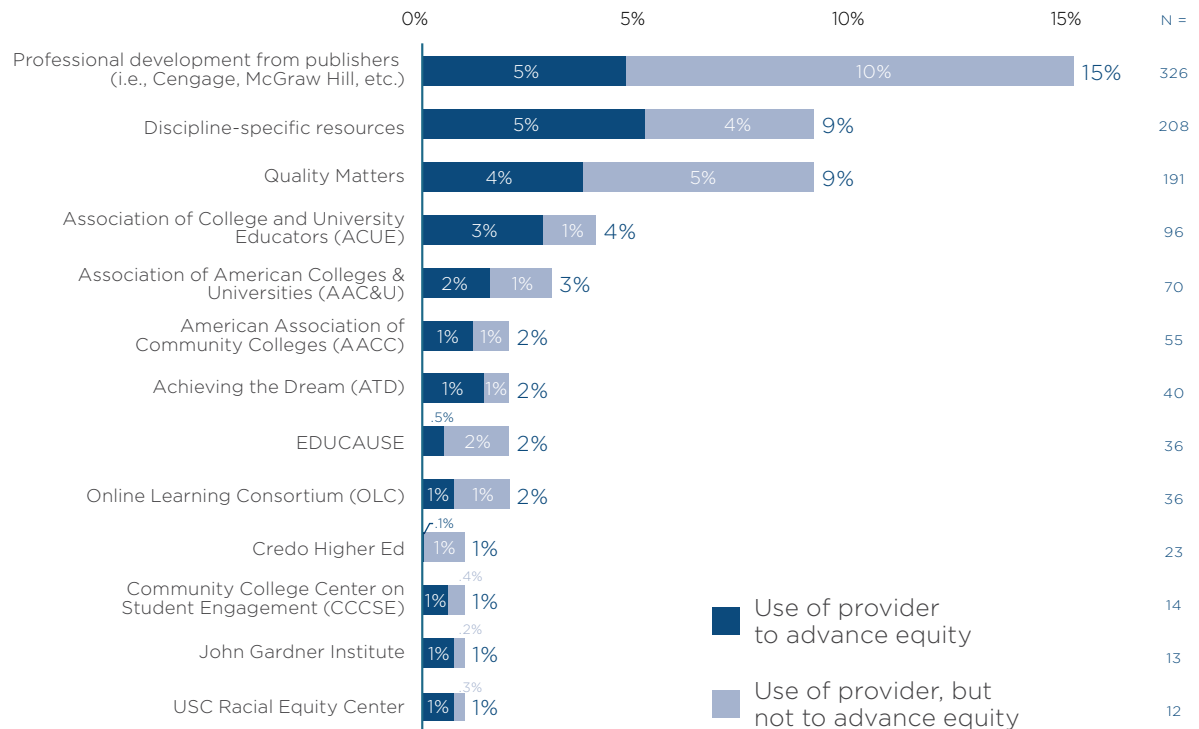


Notes: "Which of the following areas of technical assistance are areas you plan to seek external support in the next two years? Please select all that apply." N = 756

When asked about the source of professional learning at their institutions, faculty report a mix between resources developed *within* the institution (50%) and a *combination* of internal and external resources (37%). Two-year institutions (47%) and MSIs (43%) are more likely to use a combination of internal and external resources. This heavier reliance on external resources also may be a factor in the higher effectiveness-at-scale rates.

The top source of external professional learning is publishers, followed by a diversity of professional associations, nonprofit organizations, and training providers. While there are providers that support professional learning focused on racial and socioeconomic equity, each provider has a small share of the professional learning market.

PROFESSIONAL LEARNING PROVIDER USAGE



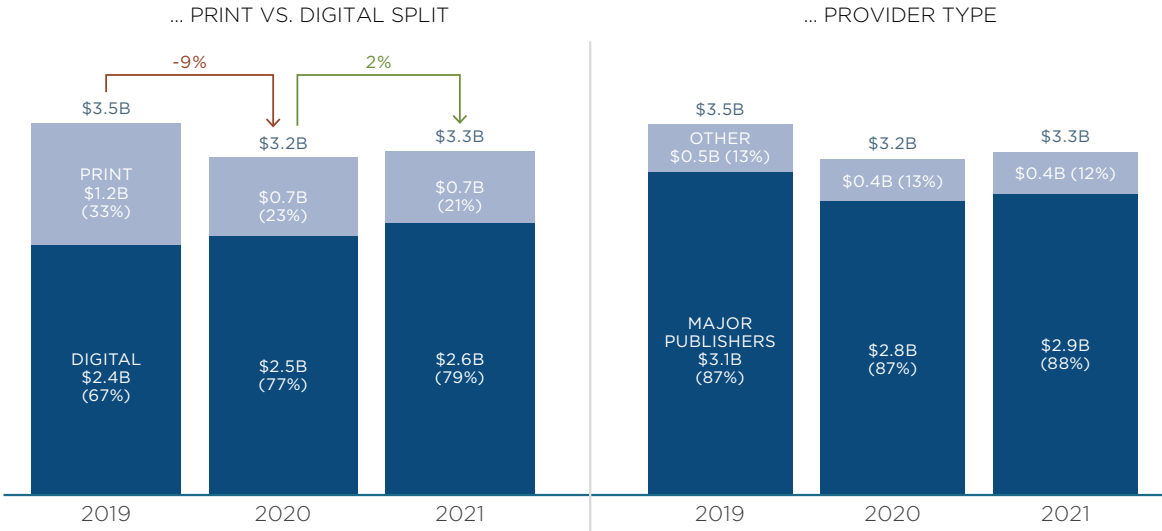
Notes: "Which, if any, of the following professional learning organizations have you used in the last year? Please select all that apply."
 "Which one(s) have helped you advance racial and socioeconomic equity for students in your courses? Please select all that apply."
 "Among the professional learning organizations you selected, which one(s) have helped you advance racial and socioeconomic equity for students in your courses? Please select all that apply."
 "How likely are you to recommend the professional learning you've received from providers to a colleague?" Organizations with <1% adoption are not displayed

THE SUPPLIER MARKET

We estimate that the domestic instructional materials market experienced a 2% increase in revenue last year. Additionally, major players gained slightly more market share in the last year through consolidation.

REVENUE FOR HIGHER EDUCATION INSTRUCTIONAL MATERIALS (IM) PROVIDERS,

CALENDAR YEARS 2019 - 2021, BY...



Sources: Company annual reports and investor filings, The National Center for Education Statistics (NCES), The National Association of College Stores (NACS). Does not include third-party distributor revenue.

The slight uptick in the total spending on instructional materials market is a result of several forces impacting the market. Negative pressures on instructional material revenues include the decline in undergraduate enrollment and the continued decline of instructional material prices. Positive drivers impacting providers of instructional materials include the slight shift of rental sales towards the direct-from-publisher purchase channel (i.e., greater capture of student spending going to the publisher vs. the distributor) and lower rates of students opting out of acquiring materials (i.e., more students are purchasing materials).

Even with the slight increase, the market overall remains down from pre-pandemic levels in 2019. The good news for students has been lower prices and more students with materials on day one. The bad news for publishers and market innovation has been continued revenue declines, margin pressure, and arm wrangling between publishers and distributors for declining wallet share.

In the context of this market, there is continued competition for student and faculty adoption. A few key areas of product innovation include:



- **LMS as the central hub:** Suppliers are creating tools built to exist solely as LMS plug-ins. As faculty technology fatigue worsened, suppliers reacted by consolidating tools into the LMS, making it even more central than it already was. For example, Cengage Infuse operates entirely through the LMS with the goal of achieving simple implementation process and basic, intuitive functionality.



- **Faculty-to-faculty collaboration:** While not a new phenomenon, there are new methods and players rolling out marketplaces and community platforms where faculty can create and share their instructional materials with other faculty members. For example, Argos Education is building a digital tool with a built-in community hub that allows faculty who use the same textbook to improve and share their lessons and activities.



- **AI-generated assessments:** Some providers are leveraging AI technology to automatically generate lessons and activities from the source material. In January 2022, VitalSource launched the Bookshelf CoachMe feature, which uses AI to automatically generate high-quality check-for-understanding quizzes from e-text content. This feature is offered directly to students and can be used by students to check for understanding and engage with content, requiring no action or implementation by faculty.



- **Behavioral nudges:** With many faculty still teaching in hybrid and online modalities and student engagement continuing to be a top faculty challenge, more providers are considering behavioral nudging features that give students timely reminders. One example is the Boost app, which connects to Canvas to give students nudges and reminders about work that needs to be submitted before the due date.

LOOKING AHEAD AND RECOMMENDATIONS FOR THE FIELD

Long-term impacts of the pandemic are creating changes for students, faculty, and institutions. Faculty teaching at the introductory course level report continued concern about their institutions meeting students where they are. They report increases in the DFWI rate in their courses, one early measure of student success, noting that students of color and from low-income backgrounds are disproportionately negatively impacted. With challenges like learning loss in K-12 and declining enrollments in higher education, instructors, institutions, and the vendor community must evolve their solutions to enable more students to be successful in not only entering but completing degrees and credentials. Given these dynamics, there are several ways in which suppliers, institutions, and other stakeholders can support instructors and academic leaders to ensure all students can succeed in their first-year courses.

PRODUCT DEVELOPMENT: FOCUS ON BUILDING PRODUCTS THAT ARE INTUITIVE TO FACULTY AND STUDENTS

Faculty are critical of many of the digital learning tools on the market today and have particularly noted that courseware tools are challenging and time-consuming to implement. Suppliers are and should continue to prioritize creating products that are simple and easy to set up and use. One mechanism to use is to invite faculty and students with varied racial and socioeconomic identities and lived experiences to be co-designers. As faculty, students, and administrators continue to report experiencing digital fatigue, exploring ways to reduce the cognitive burden that the systems and platforms put on users is critical. One example of how suppliers are creating simpler products is a shift toward advanced e-text usage where simple platforms provide some interactive content and basic quiz functionality. Despite the lack of more advanced, adaptive, and courseware-like features, advanced e-text is relatively easier to adopt, still enables users to adopt EBTs, and results in higher levels of instructor satisfaction.

DISCOVERABILITY: ENABLE THE SELECTION OF DIGITAL TOOLS THAT SUPPORT EQUITY-CENTERED TEACHING

It has been a perennial challenge to find and select the right digital tools that help faculty overcome instructional challenges and to ensure that students and faculty are supported to use the tools. Prior work demonstrates that when implemented well, digital tools can support the adoption of evidence-based teaching practices that produce better outcomes for students and save faculty time. While there has been historical transparency on how features save time through mechanisms such as auto-grading, less focus has been on how to select a tool designed with equity at its center. *CourseGateway* is a resource that can be used to support faculty and academic leaders in making equity-minded, data-informed decisions when selecting digital tools based on faculty reviews of digital tools.

IMPLEMENTING FOR IMPACT: PROVIDE FACULTY WITH IMPLEMENTATION GUIDANCE AND TECHNICAL SUPPORT

A 2020 study demonstrated that student perceptions about courseware are generally positive, with one benefit being increased flexibility “in terms of when to learn and take assessments, and more choices in terms of modalities for content delivery and practice.”¹³ The same study also found that implementation matters, and students were less likely to see courseware as beneficial when not “implemented well.” There is a role both tool providers and institutions can play in providing faculty with high-quality implementation support. Courseware coupled with targeted live and embedded professional learning resources can enable instructors to implement courseware efficiently and effectively and to fully use tools to facilitate use of equity-centered and evidence-based teaching practices, which often involves a pedagogical shift.

Suppliers, institutions, and faculty exploring the implementation of adaptive courseware can refer to the Adaptive Courseware *Implementation Guide* developed by Achieving the Dream, Association of Public and Land-grant Universities, and Intentional Futures in partnership with Every Learner Everywhere.

INSTITUTIONS MUST STEP UP: SUPPORT FACULTY DIGITAL LEARNING IMPLEMENTATION

Faculty’s ability to implement products well is significantly impacted by institutional policy and support (e.g., availability and quality of professional learning, IT and infrastructure), course context, and instructor experience. Institutional leaders must take steps to ensure that their institutions have built equitable digital learning infrastructure that enables instructors, students, and staff to implement effective digital learning pedagogies and tools. It is critical to ensuring that device or Wi-Fi availability doesn’t exacerbate gaps across student populations. For guidance designed to support institutions, we recommend reading *Strategies for Implementing Digital Learning Infrastructure to Support Student Outcomes*. For guidance for department chairs, we recommend reading the *Getting Started with Equity Guide and Impact Toolkit*.

13. O’Sullivan, P., Forgette, C., Monroe, S., & England, M.T. (2020). Student Perceptions of the Effectiveness of Adaptive Courseware for Learning. *Current Issues in Emerging eLearning*, 7(1). <https://scholarworks.umb.edu/ciee/vol7/iss1/5>

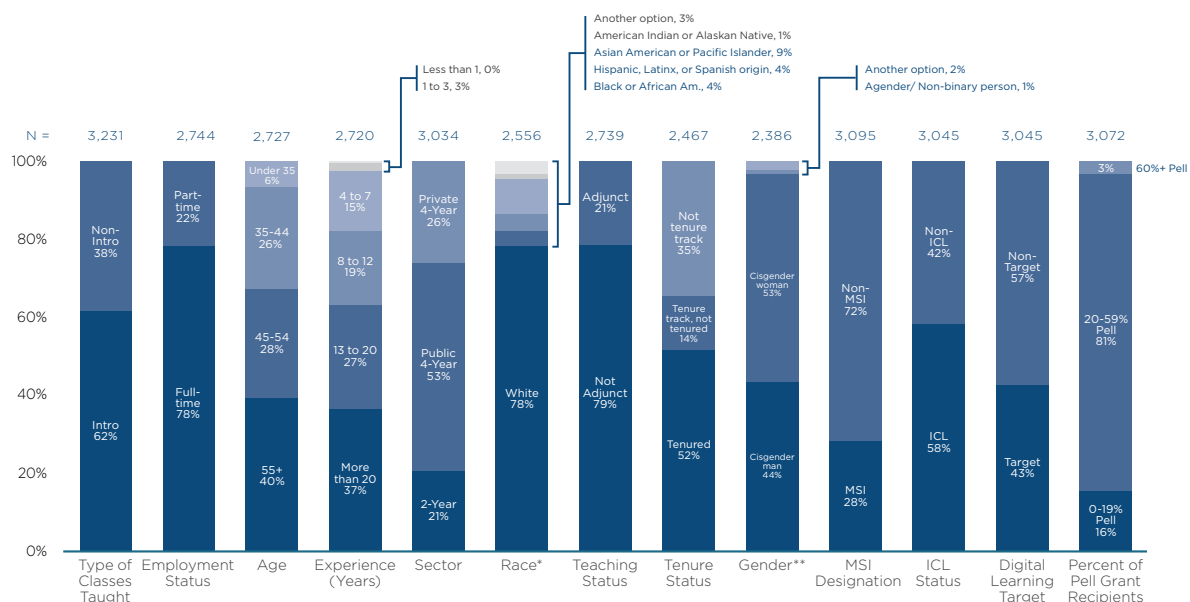
ABOUT THE SURVEY

Time for Class (T4C) 2022 is a national, longitudinal survey of over 4,000 higher education faculty and administrators. The survey is designed to measure the evolving nature of digital learning, digital courseware, and other learning tools at higher education institutions across the United States to increase affordability, accessibility, and equity for students. The T4C survey was first fielded in 2014 by Tyton Partners and Bay View Analytics with support from the Bill & Melinda Gates Foundation and Every Learner Everywhere.

In March 2022, administrators and faculty received online surveys. We collected responses from approximately 850 administrators and 3,200 faculty at 1,200 unique postsecondary institutions. Incentives of \$15 to \$25 were used to target specific populations and a balanced final sample.

This year's survey focused on the experiences of faculty who teach introductory courses and has gathered survey responses from a representative set of these faculty nationwide. The data were weighted to be representative of the national population. Because not all questions were presented to every respondent, response numbers vary by segment. Due to rounding, percentages may sum to slightly more or less than 100%.

OVERVIEW OF FACULTY SURVEY RESPONDENTS



Notes: Response rate: 2.0%. *Race question was select-all-that-apply. **Three transgender men and one transgender woman responded to the faculty survey

Based on the entire response set, the 95% confidence interval is +/- 2% for questions asked of the faculty who teach introductory courses. Questions addressed to a smaller subset because of skip logic have wider confidence intervals. Generally, subgroups with samples smaller than 30 responses were discounted.

As with all large-scale surveys, T4C has the potential for bias. It is possible that respondents willing to take a digital survey as opposed to a paper instrument could be biased towards digital technology; it is also possible that those willing to take the time to discuss their own experiences with digital learning tools have stronger opinions than those who chose not to participate.

ACKNOWLEDGEMENTS

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Tyton Partners is the leading provider of investment banking and strategy consulting services to the education sector and leverages its deep transactional and advisory experience to support a range of clients, including companies, foundations, institutions, and investors.

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Bay View Analytics, formerly known as the Babson Survey Research Group, is a survey design, implementation, and analysis organization. Bay View Analytics partners with and conducts research for universities, businesses, foundations, and agencies; its clients include Tyton Partners, the William and Flora Hewlett Foundation, the Gates Foundation, the Clayton Christensen Institute, the London School of Business, Pearson, Cengage, Eduventures, and the Alfred P. Sloan Foundation. Bay View Analytics' activities cover all project stages, including initial proposals, sample selection, survey design, methodological decisions, analysis plan, statistical analyses, and report production.

- **Dr. Jeff Seaman**, Director

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